

PSYCHOLOGY

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(Being Part I of The Science and Art of Teaching)

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PSYCHOLOGY.

CHAPTER I

THE PSYCHO-PHYSICAL ORGANISATION

Suppose a boy is running in an obstacle-race. The obstacles are not too near one another. The boy has therefore, a chance of running at top-speed from obstacle to obstacle. As the boy runs, his muscles are active. Each muscle consists of a number of fibres. At one or both ends the muscle tapers down to form a tendon. Whenever an action is performed a muscle is relaxed or contracted. *No activity of any part of the body would be possible if no muscle relaxes or contracts.* When a muscle contracts it becomes shortened. It is lengthened again when it is relaxed. It is the contraction and relaxation of the muscles which enables us to walk, run, jump and dance.

As the boy is running, it is not only his muscles that are working but there are other things going on in his body, without which it would not be possible for him to continue running for any considerable time. There is a small gland attached to each kidney which as the adrenal gland. Its chief function is to secrete a peculiar substance which gives power to

the muscles, and defers the onset of fatigue. (See figures 1 and 2.)

The result is that the boy can continue to run for a long time. *But for the function of the adrenal gland the boy would soon tire and come to a stop.*

As the boy is running the obstacle race, it is not only his muscles and glands which
The Sense-Organs. are helping him to do so, he is also availing himself of the service rendered by certain other organs of the body. He sees the obstacles before him and the fellow-runners who are running ahead of him. He also hears the competitors running very close behind him and feels the ground under him. The eye shows him the obstacles and the boys before him. The ear conveys to him the sounds of his competitors. The skin lets him feel the hardness of the ground. The eye, the ear, and the skin are sense-organs. *Whenever a man is doing anything, his sense-organs give him a knowledge of his surroundings and he regulates his actions accordingly.*

While the boy is running the obstacle-race, he is not only using his muscles, glands, and sense-organs, [he is also, most
The Nervous System. probably, thinking and planning. If there is an obstacle before him, he tries to discover its nature even when he is at a distance from it. There is an obstacle which he can cross either by jumping over it or by crouching under it. He understands the nature of the obstacle and makes

up his mind either to jump over it or to creep under it. When the boy is trying to understand the nature of the obstacle and is thinking about it and the best method of overcoming it, he is being served by what is called his nervous system. *No one can accomplish anything without the agency of the nervous system.* Even the muscles cannot contract or relax unless they are stimulated by the nerves.

The nervous system consists of the nerves and the nerve-centres. The nerves are of two kinds:—(1) sensory, and (2) motor.

The Parts of the Nervous System. The sensory nerves carry the effect made on a sense-organ to the nerve-centres. The motor nerves carry impulses from the nerve-centres to the muscles or the glands. There are many nerve-centres. Some of them are comparatively higher and others lower. The highest nerve-centre is the upper part of the brain. It is called the brain-cortex. The lower nerve-centres are situated in the *cerebellum* or the small brain, the spinal column and in the autonomic system on either side of the spinal column.

As the boy who is running the obstacle race sees another boy who has overtaken him and is trying to pass him, he increases his speed. What takes place in his body is that the image of the other boy falls on a part of his eye called the *retina* where some sort of change takes place. This change generates an impulse which is carried by a sensory

The working of the Nervous System.

nerve to the brain cortex. Some change goes on in the brain cortex. This generates another impulse which is carried by a motor nerve, first to the lower nerve centre and then to the muscles of the leg and the adrenal gland. The muscles begin to contract and relax more quickly and the adrenal gland begins to secrete more *adrenin* which is sent through the blood-stream to the muscle thus enabling it to function more rapidly.

Thus we have seen that as the boy is running, seeing, understanding, thinking, and jumping over or creeping under obstacles the following parts of his body are active:—(1) his muscles, (2) his glands, (3) his sense-organs, (4) his nerves, and nerve-centres, including the brain.

Muscles are of two kinds:—(a) those muscles most of which are attached to the bones, and are called striped muscles, and (b) those muscles most of which are not attached to any bone and are called smooth muscles. All the bones are provided with striped muscles, which by their contraction and relaxation bring about movement. The skeletal or striped muscles also called voluntary muscles make up the principal mass of the body as a whole. The smooth muscles are found in all the blood-vessels throughout the body and in most of the organs situated inside the body. They propel the contents of the alimentary canal by their contraction and relaxation.

The Muscular
System

The position of the body is maintained by the co-ordination and co-operation of a large number of striped muscles. Two or more muscles act on the same bone at the same time. The result is that the bone is kept in a stable position. Certain muscles, for example, pull the trunk of the body forward, while certain other muscles pull it backward. The result is that the trunk is maintained in a stable position. Similarly with the other parts of the body, such as the head, the arms and the legs. Besides, whenever we make a movement the striped muscles are active, as we have seen above.

The smooth or involuntary muscles of our body are responsible for all movements which go on inside us. We swallow our food, digest it, and throw out the waste-matter because the smooth muscles in the throat, in the stomach and the intestines are active. The blood circulates in our veins and arteries because the heart itself is a muscular organ, which contracts and relaxes, and there are smooth muscles in all the blood-vessels, which help the movement of the blood forward. We breathe because there are muscles in the diaphragm and the walls of the chest, which expand and contract the latter. These muscles are active when we inhale or exhale. (Figure No. 3 will give an idea of the number and arrangement of the muscles in our body).

The glands either secrete certain substances

The Glandular System. which are made use of by the other organs of the body, or eliminate certain waste products of the body.

There are two distinct kinds of glands, namely (a) Duct-glands, and (b) Ductless-glands. The duct-glands have tubes attached to them, through which they pour their secretions. The ductless-glands have no such outlets. They mix their secretions directly in the blood-stream as it flows through them.

The more important of the duct-glands are the small glands of the mouth, the small glands of the stomach, and the small glands of the skin; and the four big glands, namely the pancreas, the liver, and the two kidneys. The glands of the mouth secrete saliva, the glands of the stomach and the pancreas secrete other digestive liquids, which are extremely important for the digestion of our food. The liver secretes bile. The liver is the biggest of all the glands. It has the power to convert the sugar which we eat into the substance known as glycogen, and to store it for use in time of need. The kidneys purge the blood of its waste-matter and produce urine. The sweat glands of the skin perform a similar function. They throw away the waste product in the form of perspiration. The sebaceous glands of the skin secrete an oily substance which lubricates the roots of the hairs. Of the ductless glands the more important are the thyroid, the parathyroids, the adrenals, the pituitary, the thymus, the pineal

The Ductless-
Glands. gland, the spleen and the sex glands. The secretion of the thyroid gland has a most important effect on the growth and development of body. The thyroid and parathyroids are situated in the neck. The adrenals are situated just above the kidneys. The adrenals secrete adrenin. Adrenin is a powerful heart and vasso-motor stimulant. It acts on the muscles so that they do not get fatigued too quickly. When there is a deficiency of adrenin a person becomes dull and stupid.

The pituitary glands are situated at the base of the brain. They secrete pituitrin. When there is an excess of the secretion of this gland, the limbs become extraordinarily long. If the secretion of this gland is scanty there is a tendency towards obesity. The pineal gland is situated in the centre of the brain. This gland is most active in childhood. If by chance the pineal gland is sluggish in childhood, the child becomes precocious. He begins to behave as if he were a grown-up man. The thymus is situated in the neck near the thyroid. It is very active in childhood. But it does not act when the child has grown up. If the thymus gland continues to work after childhood, the grown-up man behaves like a child. The sex glands determine the sex of the person. These glands are different in men and women and produce different results. If the appropriate sex glands in a man are deficient, the man begins to behave like a woman. If the appropriate sex glands

in a woman are deficient, she begins to behave more or less like a man. The spleen secretes some of the elements of the blood.

The secretions of the ductless-glands are called hormones. They are being mixed with the blood-stream all the time that we are alive. The proper mixture of these hormones is very important from a psychological point of view. If the balance of these hormones in the blood is in any way disturbed, the working of the entire psychophysical organism undergoes a remarkable change. (For the situation of the various duct-glands and ductless-glands in the human body see figure 4).

Each sense-organ gives us a knowledge of a particular kind with regard to our surroundings. There are not less than twelve sense-organs in the human body. (a) The eye gives us a knowledge of the appearance of objects. (b) The nose gives us a knowledge of the various smells by which we may be surrounded. (c) The ear gives us a knowledge of the sounds which reach us. (d) The skin gives us a knowledge of the objects which come in contact with it, of the objects which are hot or cold and of the objects which are directly injurious to our organism. (e) The tongue gives us a knowledge of sweet things, sour things, salt things and bitter things. (f) The upper part of our throat conveys to us the knowledge, that we need something to drink.

(g) The oesophagus lets us know when any object is repulsive or nauseating. (h) The stomach informs us the fact that it is empty and that we need something to eat. (i) There are certain round and hollow bones situated inside the ear which are called the semicircular canals; and there are two other hollow bones which have in them bags of thin membrane. These are called the membranous sacs. The semicircular canals and the membranous sacs give us the knowledge that our body or our head is not in a stable position. They give us a knowledge of loss of balance and of movement of the head. (j) The tendons are those fibres which connect the striped muscles with the bones and give us a knowledge of muscular fatigue and in conjunction with the muscles and joints give us a knowledge of weight and pressure. (k) The blood vessels give us a knowledge of there being something wrong with the blood which circulates in them at a particular place. And (l) the lungs give us a knowledge of the air which we breathe being refreshing or suffocating.

Besides the sensory and the motor nerves, the nervous system consists of at least five nerve centres. (a) The cerebrum is the highest nerve centre. Its outer portion is called the brain-cortex or grey matter of the brain. (b) At the base of the cerebrum there is another nerve-centre, which is called the mid-brain. (c) There is a third nerve-centre which occupies the lower-most part of the brain. It is called the cere-

bellum, or the hind brain. (d) The fourth nerve-centre is the medulla oblongata or the 'bulb'. The medulla oblongata lies between the brain centres and the lowest nerve centre. The brain-cortex, the mid-brain and the hind-brain, are the brain centres. The bulb is not a brain centre. All the same it is a nerve centre. (e) There is another nerve centre situated below it which is called the spinal cord. The spinal cord lies embedded in the back bone. Then there is the autonomic system or Ganglia which controls the action of the muscles that bring about movements of the internal organ. (For the situation of the various nerve-centres see figure 6).

We have seen that as the boy whom we are studying runs the obstacle race, his muscular system, his glandular system, his sense-organs and his nervous system are all active. Without the working of any one of these, the boy would not be able to run the race. Without the activity of his muscles he would not be able to move his legs. Without the working of the glandular system, the boy would be fatigued soon after he began to run and would not be able to continue running. Without the working of the sense organs, the boy would not be able to see the obstacles before him or his fellow runners, to hear those who are following him, or to feel the hardness or the softness of the ground on which he is running or the heat of his own body. Without the working of the nervous system, he would not be able to know anything or be able to move his limbs.

even if the sense-organs were active. Above all, in the absence of the working of the higher brain centre, he would not be able to think or to plan as to how he should deal with the obstacles and how he should regulate his speed.

But it would be wrong to suppose that the muscles, the glands, the sense organs, and the nervous system act independently of one another. The boy who is running a race is not a hotch-potch of all these things. He is a living, thinking organism. What we mean by his being a living, thinking organism is that (a) he is a systematic unity, (b) he is capable of developing or growing of his own accord, and (c) he is a being who does not exist for other persons only but exists for himself.

(a) The parts of a stone are only combined in a mass by certain external forces. If we break a stone into two parts, each one of them is as good a stone as the other. The bigger stone is only a sum-total of its parts. The boy who is running a race is not like this. If any part of the boy is separated, that part is not the boy. The boy is not only a sum of his parts. *The different parts of the boy are united in a systematic manner.* Each part is necessary for the working of the whole. The whole is necessary for the working of each part.

This is one of the things which make the boy a living organism.

(b) If we separate a watch into the different parts of which it is made up, each part is not a watch as each part of a stone is a stone. The parts of a watch are arranged according to a plan. But a watch is not a living organism. The reason is that the scheme according to which the parts of the watch are arranged is not a scheme of the watch itself. It is a scheme of somebody who made the watch and is imposed on the watch. The watch cannot grow of its own accord as a plant grows, because the plan on which the watch is made is not its own plan but an external one. This is a reason why a watch is not a living organism. The plan on which the boy is made is his own. *He is capable of self-development.*

(c) Besides being a living organism, the boy who is running an obstacle race, *is an organism which exists for itself and not only for the people who observe him.* A plant is a living organism but it cannot be said to have an existence for itself. It does not know anything. It does not think of itself nor of the other people who are observing it. It does not lead a life in itself and for itself. It does not desire or intend or determine anything. This is what we mean when we say that, although it is an organism, the plant is not

a psycho-physical organism. On the other hand the boy whom we are studying is a psycho-physical organism. *Systematic unity, self-development and subjectivity are the characteristic marks of a psycho-physical organism.*

Psychology seeks to study the working of the psycho-physical organism. It is a branch of knowledge. In as much as the knowledge, which we call psychology, is well-arranged, systematic, and exhaustive, so far as the workings of a psycho-physical organism go, psychology is a science. *Psychology tries to know all about the workings of the psycho-physical organism.* Psychology can, therefore, be defined as *the science of the working of the psycho-physical organism as a whole.* We have added the words "as a whole" to emphasise the point that psychology does not concern itself with the workings of the various parts of the psycho-physical organism. Psychology does not study the workings of the muscles, the glands, the sense organs, or the nervous system in themselves. Psychology studies the workings of the *entire* psycho-physical organism. The various systems which we have seen to be active at the time of a boy's running an obstacle race, act together and harmoniously. The boy regulates the activity of his striped muscles according to what he sees or hears or feels. His body regulates the activities of the smooth muscles and the glands according as he needs more or less speed. It is such a syste-

The Definition of
Science.

matic working of the whole of the psycho-physical organism which psychology studies; and it is this feature of psychology which distinguishes it from physiology. Physiology studies the

Psychology and
Physiology.

functions of the muscles, the glands, the sense organs etc. *separately*. The psychologist does not study the activity of any one of these organs separately or independently. He studies the working of the whole organism. While the physiologist studies how the muscles, *or* the glands, *or* sense-organs of the body work; the psychologist studies how the muscles *and* the glands *and* the sense-organs *and* all *work together*. Psychology studies the whole, not any of its parts separately. Hence the definition of Psychology as the science of the working of the psycho-physical or human organism as a whole. It studies what a living, thinking man does and how he does it.

CHAPTER II

THE FORMS OF PSYCHO-PHYSICAL ACTIVITY.

We have seen that *the psycho-physical organism works as a whole*. The whole nervous,

The relative predominance of the activities of the different organs of the body.

motor and glandular systems act together at every time. Even hearing a loud noise, stooping, rotating the head or any other ordinary activity of the organism would effect a

change in practically every muscle of the body and start a wealth of glandular activity. But [at any one time the activity of either the motor or the glandular or the nervous system predominates, while the activities of the other systems are also going on.

The most prominent activities of the psycho-physical organism are those in which the striped voluntary muscles are used.

Actions are performed when the activity of the striped muscles predominates.

When the striped muscles are active some bone or the other of our body moves. The result is the movement of a limb of our body or of the whole

of our body. *The activities of the psycho-physical organism in which the striped muscles take a prominent part are called 'actions.'* Actions therefore, are the most prominent activities of the psycho-physical organism. Getting up, sitting down, lying down, walking, jumping, running, dancing, moving the fingers, nodding etc. etc. are all actions. When we act, the

work of the striped muscles is prominent, but it does not mean that the smooth muscles, the glands and the nervous-system are not active at all. They are all active when actions are being performed, but their activities, at this time are not prominent as compared to the activities of the striped muscles. The relative prominence of the working of the striped muscles, therefore, gives rise to what we call actions.

Another form of the activities of the psycho-physical organism is that which is

The so called physiological movements are performed when the working of the smooth muscles predominates.

very often erroneously called physiological movement. It consists in the working of the smooth muscles of our body. The digestion of our food, the beating of our heart, breathing, the circulation of blood etc. etc. are all called physiological movements. But they are 'psycho-physical movements' just as actions are. All these movements are the work of the psycho-physical organism. The whole of the psycho-physical organism is active when these movements are performed, just as the whole of the psycho-physical organism is active when actions are performed. Some change or the other in the tone of the striped muscles is always going on while the physiological movements are being performed. Likewise, no physiological movements would be possible if the glands and the nervous system are not doing their duty. Therefore the only difference between the so-called physiological movements and actions is this ; that while in the

former the striped muscles take a prominent part, in the latter the smooth muscles play a prominent part. Perhaps in most of the actions, the nervous system also plays a more important part than it does in the physiological movements. But this does not mean that the physiological movements can be performed independently of the working of the nervous system. They are all controlled by the nervous system and depend for their efficiency on the working of the glands of the body. They are therefore, like actions in every respect except this, that in them *the working of the smooth muscles predominates* while in actions the working of the striped muscles predominates.

Another form of the activity of the psycho-physical organism is the secretion of the glands. As we have seen, the glandular system does not work independently of the muscular or nervous systems of our body. While any gland is secreting, simultaneously with it, certain muscles are active and the nervous system is doing its duty. The activity of the glands is controlled by the nervous system just as the activity of the muscles is controlled by it. The secretion of saliva by the glands of the mouth, the secretion of bile by the liver, the secretion of urine by the kidney, the secretion of perspiration by the sweat glands are all psycho-physical activities. They are performed by the whole psycho-physical organism and are very important for the proper functioning of

In the third form of psycho-physical activity the secretion of glands predominates.

the psycho-physical organism itself. The secretion of the thyroid-gland, the adrenals, the pituitary etc. are perhaps even more important. They determine the mode of the activity of the psycho-physical organism in general, because they mix their hormones directly in the blood stream. The blood circulates all over the body and affects the working of every single organ in the body. This is the reason why a disturbance in the secretion of any one of these glands makes a tremendous change in the condition of the psycho-physical organism. A little more or a little less of secretion of the pituitary or the pineal or the sex gland, for example, will effect a remarkable change in the behaviour of the organism.

Actions are the most overt or apparent activities of the psycho-physical organism. The so-called

The most covert activities of the psycho-physical organism.

physiological movements are comparatively concealed. They are less overt than actions. The secretions of the glands, particularly of the ductless glands, are even more covert than the physiological movements. But there are other activities of the psycho-physical organism, perhaps more important than any of those described above, which are even more covert than the secretions of the ductless glands. They are genenerally known as mental activities, perhaps as erroneously as the movements of the smooth muscles are known as physiological movements. They are the activities of the psycho-physical organism like all the other activities of the psycho-physical organism.

The most covert or concealed activities of the psycho-physical organism can be divided into two

Perception defined. broad classes—perceptions and thoughts. Actions, physiological movements, gland secretions, perceptions

and thoughts are, therefore, the five forms of psycho-physical activity. *Perception consists in the knowledge by the psycho-physical organism of any object which is present to any one or more of its sense organs. The knowledge that the ground under him is hard is a perception of the boy whom we have supposed to be running an obstacle race. The knowledge that there is an obstacle of a particular kind before his eyes is a perception of his. The knowledge that a boy has just out-run him is a perception. The knowledge that there is a boy just behind him is also a perception of his. Every perception is given to us through some sense organ or the other. An object which is perceived must be either seen by us or heard by us or touched by us or known by us through another sense organ.*

The thing which we perceive is called the object of perception. But *we do not all perceive the same object in exactly the same way. Even one man does not perceive the same object in exactly the same way at different times. A peculiar obstacle is placed in the path of the runners. (See Figure 7). All the runners see it from a distance. One of them perceives it as a wooden horse of small size. Another perceives it as a big toy-elephant. A third perceives*

Percepts are not things.

it as a small gateway. They all perceive one and the same object. But each one of them perceives it in a different way. Even the same boy does not perceive it clearly as a dummy-horse or elephant or gate-way all at once. He first perceives it vaguely as some sort of structure erected on the race course. Then he perceives that it is something which has an opening, through which it may be possible for him to creep. It is when he gets quite near to the obstacle that he perceives it either as an artificial horse or elephant or gateway. *The*

Percept defined.

object as it is perceived by some body is called the percept. The object exists in the outside world. But the percept does not exist in this way. Each man's percept is his own and is with him. As a matter of fact, *all that we know when we perceive is the percept.* The real object is, perhaps, never perceived by any body. Even when we all call a certain object by the same name, we are not certain that the percepts of all of us are the same. A number of people may speak of the same thing. For the purposes of exchanging their ideas it is all right. They all refer to the same objects. They mean the same thing. But in all probability, each one of them understands some thing slightly different from what any other of them understands. *The object of which they are speaking is the same, but the percepts which they all have are different.* The real object of knowledge is therefore, the percept. We talk of the thing but we do not actually know the thing-in-itself.

Thus, it will be easy to see that *we understand more*

Richer and poorer
percepts.

when we perceive certain things and less when we perceive other things. The percept in the one case is richer than the percept in the other case. When the running boy sees an obstacle for the first time, from a distance, his perception of the obstacle is poor. As he gets nearer and nearer to it, his perception of the obstacle gets richer and richer. He understands more and more of it. Our perceptions of those objects with which we are very familiar are very rich. Our perceptions of those things which we see for the first time are comparatively poor. We do not understand much by them. We do not see more than what is presented to us. The perceptions of the obstacles are very rich in the case of the boy who has run obstacle races and overcome similar obstacles before. The perceptions of the same obstacles are comparatively poorer in the case of those boys who have not run obstacle races and dealt with similar obstacles before. The former understands much more by them than the latter.

The second type of the very covert activities of the psycho-physical organism is thought.

Thought defined. While perception is the knowledge of an object which is present to some sense organ or the other, *thought is the knowledge of those objects which are not present to any sense organ at all.* The knowledge of the obstacle which the boy sees is a perception. The knowledge of the boy behind him, whose foot-steps the boy under study hears, is also a perception. But

the knowledge of a boy who is neither being seen nor heard is a thought. That which we understand by an object, of which we are thinking, is also called an idea. Just as each man's percept of the same object is different, in the same way each man's idea of the same object is also different. Our idea of a thing is what we mean or understand, when we refer to that thing. In so far as we do not always understand exactly the same thing when we speak of an object, our ideas of an object are not exactly the same. Ideas are also richer and poorer just as percepts are richer and poorer. The more we perceive an object and the more we think of it and know about it, the richer does our idea of that object become. The less we know of a thing, the poorer is our idea of that thing.

When we think of an object which we have seen before us, we may or may not have a vivid picture of that object before us. When the running boy thinks of the runners behind him, he may or may not have clear, vivid pictures of those runners. If a boy has a vivid picture of the competitor who is following him, he will have a clear knowledge of the size of the boy, of the way in which he is running, of the colour of the shirt he is wearing etc. etc. But it is not necessary to have all these things clearly before him, in order to be able to think of the boy who is following him. Our runner may not think of the colour of the shirt or picture to himself his mode of running, and yet he may have a clear idea of the

Imagination defined.

person who is following him. If our runner makes a mistake he can do so whether he has a vivid picture of the wrong man before him or not. *Picturing clearly any objects of which we are thinking is called imagination. The picture which we have before us is called the image.* The boy, who has a vivid picture of the person following him, is having an image of that person before him. He is imagining. The other boy who thinks of the person following him without having this vivid picture before him, is not having any image. He is not imagining, although he is thinking just as the other boy is thinking.

Just as we can have images of the objects which can be seen by us, we can also have images of the objects which can be heard or touched by us. We can imagine a certain *Auditory, tactual, and other kinds of imagery* tune. We can imagine the voice of friend. We can imagine the sound of any word we like. In the same way we can imagine the feel of our bed. We can imagine the hardness of the chair which we are not occupying. We can imagine the coolness of the water, while we are not swimming. Some people can even imagine the tastes of different foods, and the smells of different objects. We can surely imagine our head-aches and our stomach-aches. But it is very seldom that we make use of any images other than those of sight, sound and touch. Perceptions and images of sight are known as visual. Perceptions and images of sound

are known as auditory. Perceptions and images of touch are known as tactual. Just as by far the greatest number of our perceptions are visual, by far the greatest number of our images are also visual. If we are by nature imaginative, we picture things clearly before us even when they are not being seen by us. Less often we imagine sounds that are non-existent. Even less often we do imagine the touch of those things which are not present. It is however open to doubt whether we can imagine the smell, taste and other effects on our psycho—physical organism of the objects, which are not being perceived by us. In those cases where the eyes cannot function, the perceptions are generally auditory, tactual, olfactory (of smell) or gustatory (of taste). In these cases there is also a wealth of imagery, which is not visual. The blind persons can perhaps imagine smells, tastes etc more than those people do who can see.

Images and ideas have one great advantage over perceptions. We can have a perception of one object only. This does not mean that we cannot have a perception of a group of objects. But what is meant is this, that *we cannot have two or more objects fused into one perception*. We can perceive this man or that, but we cannot have a perception of men in general. Every perception is a perception of a particular object.

This is not so in the case of images and ideas. *We can have a single image of a number of objects, provided*

Generic Ideas. the objects are very much alike. As for example, we can have a composite image of 'man,' 'horse' or 'cow.' It will not be an image of this particular man, this particular cow, or this particular horse. It will be an image of man, horse or cow, in general. We can produce a similar result in the case of a photograph by exposing the same plate to a number of similar objects one after the other. It is in this way that the doctors procure the typical image of a pthysical patient or a mono-maniac, for example. They expose the same plate to a number of patients suffering from the same disease. The result is that in the picture so obtained the features which are common to all the patients are made prominent, while the features in which the different patients differ from one another are obliterated. We cannot have a perception of a pthysical patient or a maniac, in general. We can have a perception only of this patient or that. *Perception is strictly confined to the present.*

Composite images are known as '*generic ideas* or '*abstract ideas*.' They are only possible when the objects are very much alike. When the boys of a class are more or less of the same size we can have the image of the typical boy of that class. But we cannot have a composite image of a class of boys, if every boy in the class is of a different size and shape. We can, however, have a single idea of a number of objects, even when those objects are not very much alike. *We can think of a number of boys*

in one idea even when the boys are not of the same size or shape. We can think of all the better class of boys, for example, as intelligent boys or hard-working boys. In this way, we can think of classes comprising innumerable objects having some points in common. We can think of men in general, houses in general, or cows in general. Whenever we try to define a word we think of all the objects covered by that word in this way. Such ideas are called 'general ideas.' *General ideas are such that they refer to a number of objects not as a group of objects but as a class or kind of objects.* It is important to understand the difference between a 'general idea' and a 'generic idea.' The latter is an image, the former is not an image. They both refer to a number of objects. But a generic idea represents them in a composite *image*, while a general idea stands for them without being an image of them.

CHAPTER III

THE FORCES OF PSYCHO-PHYSICAL ACTIVITY

Why is it that a boy runs an obstacle race? There can be many answers to this question. He may run the race because he wants to win a prize. He may run it so that he may derive the satisfaction of knowing that he is the best runner in the school. He may run it only because he is fond of athletics. Or, he may run it only for sport and amusement. Whatever may be the reply,

There must be an origin behind all the psycho-physical activities.

there is no doubt that *there must be some force which is impelling the boy to run the race.*

A similar question can be asked regarding all the activities of the psycho-physical organism. Why is it that we digest our food? Why is it that our glands secrete? Why is it that we perceive? Why is it that we think? The answer in each case will be different; and many different answers can probably be given in each case. But the fact remains that there are some definite forces which prompt us to activity. Psychologists have succeeded in discovering many such forces, which are innate in all human beings.

One great force, which leads the psycho-physical organism to work, is the urge to live.

The urge to live. Each one of us strives to keep himself alive. Every psycho-physical organism is active so that it may live, grow and develop. Whenever there is anything which threatens our life, we come to know of it. The eye gives us a knowledge of the approaching enemy. The ear gives us a warning of any sound that forbodes danger. The skin tells us if it is too hot or too cold for our comfort. The tongue gives us notice of anything unpalatable which may possibly be dangerous to health. Our stomach digests the food we eat so that we may be able to live. Our blood circulates for the same reason. Our glands secrete the substances which we need at a particular time and so on.

In childhood certain glands secrete certain sub-

The urge to grow
and develop.

tances which, when mixed with the blood, help the bones and the other organs to grow. Again, there is always a tendency in us to add to our store of knowledge and to make it more and more systematic, so that it is naturally growing.

It is generally believed that we do a number of things because we want to expand or develop. The more we add to our possessions, the more we expand. The house, the clothes, the family which are all ours, make us feel that we have expanded. Some people do certain things in the hope that they would live in the world even after they are dead. They try to achieve something extraordinary or to introduce something extremely new, so that people may not forget them when they are no more. At least their names may live after them.

The natural tendency to live, to grow and to expand or develop is the one general force behind all the activities of the psycho-physical organism. It has been called the "will to live". So long as a man is alive, he continues to affirm himself over against the world in which he lives. The tendency towards *self-affirmation* is the general force which impels the psycho-physical organism to be active.

Through some mysterious process, certain persistent types of self-affirmation have made their appearance through the life of past generations. The general

The origin of
instincts.

life activity has been differentiated into a number of specific activities.

Special organs of self-affirmation have developed in the history of the race. Life, as a whole, may be regarded as the unrolling of one great instinct, of which the special instincts are only the prominent points. The will to live prompts the organism to general movements and a knowledge of its surroundings in general. But this cognitive and motor power has assumed certain typical specific forms in the process of growth. These specific tendencies of knowledge and action are known as instincts.

"Instincts," therefore, as defined, by Instincts defined. Dr. McDongall, "are inherited or innate psycho-physical disposition which determines its possessor (i) to perceive and pay attention to objects of a certain class, (ii) to experience an emotional excitement of a particular kind upon perceiving such an object (or objects) and (iii) to act in regard to it in a particular manner or at least to experience an impulse to such actions." *The instincts together with the general tendency of self-affirmation are the prime movers of human activity.* Whatever a man does, can be traced to the activity of either the general tendency to live or to one or other of the instincts, the specific tendencies of knowledge and action.

TYPES OF INSTINCTS

If a small child perceives a hideous object, he cries and runs away from it. The
Fear force, which urges him to run away, is

shells and pebbles. There is a strong tendency in small children to collect pebbles, flowers and all sorts of things that attract his notice. This is called the instinct of *acquisitiveness*. This instinct is at the back of our tendency to acquire property. The instinct of acquisitiveness consists in taking notice of the things which are around us and which form a heap if they are collected and in the tendency to begin collecting them. This is also the miser's instinct. The miser clearly perceives that there is a possibility of collecting money and begins to collect it. A person is a miser in so far as he does not desire wealth because it is useful, but because he takes pleasure in hoarding it.

When a boy has reached the age of puberty, he develops the tendency to appear to
 Sex advantage before the opposite sex
 He is attracted towards girls of his age and tries to attract their notice by display. This tendency is called the *sex* instinct. This instinct consists in taking notice of the members of the other sex, in being attracted towards them and in endeavouring to attract their notice. This instinct is not active before the age of puberty.

When a woman sees a tiny little thing she has a
 Tender Emotion tendency to pick it up and to fondle it, if it is a living thing and innocuous. If you perceive a person in a difficulty, you have a tendency to help him. These tendencies are the expression of the instinct which is known as *tender emotion*. It is also called *affection*.

It is because people have this instinct that they protect the helpless. The big and strong man has a natural tendency to help and protect the small and weak. The grown up man has a tendency to protect the child.

If you are in a lonely place, where there are no other men, you will have a strong tendency to get into touch with other men. You feel that life is incomplete if you do not mix with others and enjoy their company. This is the reason that men live in families and form social ties. This is also the reason that solitary confinement is the severest form of punishment. The tendency to perceive other human beings and to desire their company is called *gregariousness*. It is also called the *social instinct*. It is this tendency which is at the back of all social virtues and which supports the fabric of society. The various associations, clubs and fraternities flourish because of this strong gregarious instinct in man. It is on account of this instinct that we live in towns and that big towns spring up. If there were no gregariousness in man, every one of us would live an isolated life, in a cave or a structure built by oneself, very much like a beast of prey, that lives an isolated life and does not go about in a herd or flock.

When a boy sees that another boy is about to out-run him in a race, he runs with all the greater speed. If a boy is in

Self assertion.

the company of other boys, he has a tendency to do something which will distinguish him from others and establish his superiority over them. If a boy does not beat his class-fellows in class-work he has a tendency to beat them on the play-ground, in the literary club, in social service, or in the matter of clothes, books, or other possessions. Everybody has a tendency to excel others in something or other. This tendency is known as *self-assertion*. This instinct consists in taking notice of other persons who are in any way inferior to us and in displaying the superiority we are capable of. People are very fond of making a name for themselves and establishing a reputation because they have the instinct of self-assertion in them.

The instinct which is the reverse of the instinct of self-assertion is the instinct of *self-subjection*. When you are in the company of people who are superior to you, you feel small. Every boy is shy to some extent, whenever he is in strange company. This is due to the instinct of self-subjection in him. This instinct consists in taking notice of other persons who are superior to you in any respect and in trying to make yourself as inconspicuous as possible. In the company of those people, whom we do not know, we are always quiet. As we get to know them and their weak points come to our notice, we begin to make ourselves prominent. We can never take a leading part in the activities of any group so long as we do not realise that in some

respects we are superior to the other members of the group. In a society where we are sure that nobody is inferior to us in any respect we can never make ourselves prominent.

Give a strange object to a child and you will notice that he turns it this way and
Curiosity. that, tries to break it, if possible, to see it from all sides, to hear how it sounds, and even to see how it tastes. These things the child does because he has the instinct of curiosity in him. *The instinct of curiosity consists in a tendency to take particular notice of new and strange objects and to try to discover all about them.* The desire to know more and more about any subject and the taste for scientific research has the instinct of curiosity behind it. If a person is deficient in this instinct, he will not have the tendency to do any research work. If he takes up a subject he may give it up in case there is no other motive which impels him to continue his studies.

If the general tendency towards self-affirmation can be compared to a river flowing
 Instincts are the prime movers of human activities. with great force, the various instincts can be compared to the channels which that river has made for itself and in which it always flows. The general tendency expresses itself through the instincts. Somehow or other, instincts have become the permanent modes of its expression. The force which it commands has been delegated to the various instincts. Hence *each instinct*

has a force behind it. So much so that *the instincts are the only moving forces of human action.* If any person does anything we can legitimately ask the question which instinct it is that is impelling him to act. The boy runs the obstacle race either because he is actuated by the desire to excel the other boys in something, which is due to the instinct of self-assertion, or by the desire to win a prize, which is due to the instinct of acquisitiveness.

But the boy may run the race only for the sake of sport. He may be interested in the race itself and may have no ulterior motive like that of winning a prize or getting the praise of others. His motive may be only to amuse himself. Everybody is familiar with the strong tendency in children to play. There is nobody who has not spent the early years of his life in play. But play is not an instinct. Why do children play then? The psychologists have come to the conclusion that although play is not an instinct, it is a great motive force. It is a general tendency. It is not the general tendency which they call the "will to live." It is one of the expressions of the self-affirmative tendency like the various instincts. But it is more general than any instinct. The instincts are specific. There is a special kind of situation in which the man should be placed so that he may act instinctively. There is no such situation necessary for play. The child has always a tendency to play. Moreover, in play we indulge in all sorts of activities. We fear in

play, we get angry in play, we assert ourselves in play, and so on.

The characteristic feature of play is that whatever we do, when we are playing a game, is not done for the sake of satisfying some needs of our life. Although we may not need, when we are children, to earn anything by selling or buying still we sell and buy all sorts of things in play. Although the little girl does not gain anything by spending her time on her dolls, she does all sorts of things for them. Play is, therefore, something which is contrasted with work. In work our activities are pursued for the sake of something else. We work so that we may gain something. We play not because we may gain anything but because we want to play. *Play is a spontaneous activity and is indulged in for its own sake.*

When we play, we detach ourselves from the real work-a-day world. We live in a world of our own. We draw largely on the imagination. If we buy and sell we do not buy or sell real things or things of intrinsic value, nor do we offer or expect real money in exchange for the commodities which we buy or sell in play. Every child is aware of this. The child knows the difference between real money and imaginary money. But he would be perfectly satisfied if you offer him imaginary money for the imaginary stuff that you buy of him. The reason is that when children are playing they do not adopt the same attitude as they

The make-believe attitude in play.

do when they are not playing. *The attitude which is adopted in play is called the make-believe attitude as opposed to the real attitude.* When we play we suppose ourselves to be this or that, as we suppose our play-things to be this or that. One child may suppose himself to be the emperor of the world, another child may suppose herself the fairy queen. We put ourselves into all sorts of imaginary positions with varying capacities when we play and we know that all those things are only imaginary.

But it should not be supposed that when a child adopts this make-believe attitude, he is not serious at all. When children are engrossed in play they often refuse to do the ordinary things of life. A child who is playing the part of a king may not condescend to pay his respects to the elders. Once a little girl refused to shake hands with a visitor on the ground that she was baking bread and that she could not shake hands while she was doing that. This clearly shows that *we are quite serious when we play.* Still our attitude towards play is not the same as our attitude towards work. There are certain conditions which restrain our activities during play just as our activities in work are restrained. But the conditions of play are imposed on ourselves by ourselves. In play what occurs to us spontaneously triumphs over the constraining conditions. This is not so in work. In work the conditions are not of our own making. They triumph over our spontaneous tendencies.

Whenever any work becomes so easy for us to do that we can do it almost spontaneously, that work assumes the form of play. There is no hard and fast line which can be drawn between work and play. So long as external constraints are being felt, the activity is of the nature of work. The moment we substitute conditions of our own making for external conditions, the activity assumes the nature of play. We are said to play on a musical instrument, not because we are not serious when we do so, nor because it needs no effort on our part to do so. There are certain conditions which must be satisfied in order that we may be able to play on the musical instrument. But the point is that those conditions are of our own making. If we are compelled by somebody else to play on a musical instrument, or if we play because otherwise we might die of starvation, the playing on the musical instrument is as much a piece of work as any other. But if we play under such conditions that, whenever we like, we can cease to play and that whether we play or not it will not affect our income or our future, the playing on the musical instrument is of the nature of play.

Play is a great force in psycho-physical activities.

The superfluous
energy used up in
play

It is not a specific instinct, but it is like an instinct in so far as it is one of the main springs of human activities.

They say that in play we make use of the energy of the 'will-to-live' which is not being used at the time.

Children are supposed to have a considerable store of such superfluous energy. It is said that they spend that superfluous energy in play. In other words, they play because they have nothing else to do, but they have a tendency to do something.

It is true that the superfluous energy in childhood is utilised in play. But we do not play only because we have that superfluous energy at our disposal.

There is a spontaneous tendency to play.

We play because we have a spontaneous tendency to play. While exercising that spontaneous tendency, we make use of the superfluous energy at our command. We do not waste that superfluous energy. But we put it to a very good use. In so far as the conditions of play are self-imposed and the activities of play are spontaneous, we do everything naturally and with the greatest ease and elegance. The result is that in play we do things which are novel and original. *Play is the typical form of the creative activities of man.* We exercise all our originality in play. Play is, therefore, not merely an over-flow channel for the superfluous energy of the psycho-physical organism, but it is a mode of expressing the superfluous energy of the organism in the most original and creative manner.

In childhood we are not in a position to control the conditions of real life. We are, therefore, not able to do any work. But Nature sees to it that we do not waste our time and energy for want

Play is a natural device for the preparatory exercise of instincts.

of work. If we cannot work, we can play. The instinctive tendencies are at work in childhood, but they cannot achieve anything because the child is too small to control the real conditions of life. The child, therefore, adopts a make-believe attitude and gives exercise to his innate psycho-physical dispositions under imaginary surroundings. The small girl has the instinct of tender emotion. But she has no little ones to lavish her affection on them. She therefore bestows her affection on her dolls. The young boy has no enemies to fight. He, therefore, plays a game in which he can give vent to his anger on an imaginary foe. In this way, all the instincts which the children will have to use in after life, they exercise in their childhood. In exercising their instincts on imaginary objects and while adopting the attitude of make-believe, they can develop their instincts. Thus they avoid the risk of failing in actual life, when they put their instincts to the test for the first time. Most of the activities of play anticipate the serious business of adult life. Play is, therefore, a biological device which is adopted by nature so that the tendency of self-affirmation may not be entirely frustrated in the early years of life, when the child is not able to control the real conditions of life. The general tendency of self-affirmation is used in childhood in experimenting on an imaginary world of its own. Thus there are three characteristic features of play:—

(1) The *play-attitude* is a make-believe attitude. When we are playing we are not baulked by the

conditions of real life. (2) The *play-impulse* is a creative impulse. While we play we express whatever originality we have. The play modes are the strongest modes of action. (3) Through play we exercise and develop all our instincts under imaginary conditions. The *value of play* is preparatory. Just as, before we actually jump into water, we may stretch ourselves face downwards on a small table and go through all the movements in swimming in order to learn, or habituate ourselves to them, so we to make ourselves accustomed to perform all the instinctive actions before we take a leap into the world of real affairs.

The tendency to *play is an asset of the psycho-physical organism*. It affords an opportunity of exercising originality and provides a great force which can be tapped profitably when the instinctive forces have spent themselves. If we cannot persuade a child to do any thing, because he is not interested in it, we can always be sure to make him do it, if we can excite the *play motive*. Whatever a child cannot learn in any other way, he can learn through play. For the grown up man also, play is the only resort when he is tired of work. Although it may mean effortful activity, play affords a great relief, a relaxation. Besides, in order that we may be able to produce anything new or anything beautiful, we must be able to do our work with the ease and joy of play.

Very similar to this force of psycho-physical activity there is another which Imitation. is also not a specific instinct, That is known as the tendency to *imitate*. A little boy is released from his lessons with his class-fellows. He runs if his comrades run and chases some and is being chased by others, just as his comrades chase and are being chased. He jumps if the others jump and plays if the others play. He does all this because he has the tendency to imitate. *Imitation is a general tendency to do as others do and to think as others think.* It has been observed that if a pupil is an admirer of a teacher, he begins to copy the teacher's handwriting, his mode of speech, his gait, and his dress. Besides, he also has a tendency to imitate his opinions and the lines on which he thinks. This is the main reason that most of the tenets and doctrines of great teachers pass from generation to generation among their pupils. *The admirers tend to become in every respect like the model which they set before them.*

Any attempt at understanding a statement or an argument is, as a matter of fact, an Suggestion. imitation of the way in which the person who states or argues, thinks. The pupil endeavours to see as the teacher sees and to think as the teacher thinks. *When such imitation goes on without the imitator knowing that he is imitating, the imitation is known as suggestion.* Suggestion is found to be a common factor in every day life. Through suggestion we come to believe many things because others believe them or because we hear

about them. If you tell a small child that there is a green bird on the tree before him, and point to the place where he should see the bird, in all likelihood, the child will imagine he sees a bird even if there is no bird on the tree.

In the case of grown-up men, it is not so much their perceptions which are determined by suggestion as their thoughts. Most people generally believe, without trying to think for themselves, what the newspaper-editor says or the rumour in the street. In many cases *there is a certain relation established between one man and another, so that whatever the one says the other is inclined to believe without questioning.* Such is the relation between the editor of a newspaper and the readers of his paper. A similar relation exists between a teacher and his pupils, a doctor and his patients and a solicitor and his clients.

There are some people who believe that the teacher should not encourage any imitation of his thoughts and actions by his pupils. This kind of imitation, they say, does not allow the pupil to grow in his own way. It takes away originality from the pupils. Psychologically this is not the right attitude to adopt. *Imitation is a necessary stage in the development of a psycho-physical organism.* Even the great men of the world began by imitating others, who had gone before them. Imitation does not mean copying in

The use of suggestion by the teacher.

every detail. It is wrong to believe that when one man imitates another, he copies him to the minutest detail. *Even in imitating another man's action we act in our own way.* If we imitate a man's gait, for example, we do not walk in exactly the same way in which he walks. Our imitation of his gait is also characteristically our own. Outwardly our walking appears to be exactly the same as his. But if we observe closely, we shall find that although the two are very much alike, they are far from being exactly the same. This can be observed most clearly in the case of handwriting. If one man imitates another man's handwriting, he may write a hand very much like the other. But the two handwritings can never be exactly the same. Very often similar handwriting is found in all the members of a family. But no two handwritings are exactly the same.

The same thing applies to thought. Even if we try to think on the same lines as another person does, we can never think exactly the same thoughts as his. *Each man's thoughts are characteristically his own.* No two thoughts can ever be exactly alike. It is not therefore a mistake if the child is encouraged at times to think in the same way in which the teacher does. Without doing so it would not be possible for the pupil to understand anything. It would be very bad indeed if the pupil's thoughts are exactly the same as the teacher's. But this happens very seldom indeed. It can happen only when the pupil has no capacity to think at all. If a pupil has the capacity to think for himself, he will think his

own ideas while trying to follow the ideas of the teacher.

The new teacher, therefore, neither discourages imitation of every kind, nor compels his pupils to think in exactly the same way as he does. He does not ask his pupils always to think in such and such a way or to do such and such a thing. Still it is his duty to create such a relation between himself and his pupils that his mode of living and thinking may have a healthy influence on the pupils. The teacher avails himself of the suggestibility of the child but does not thrust his own views or opinions on him and force him to accept them.

The general tendency to self-affirmation, the various instincts, the tendency to play and to imitate are the only natural forces of psycho-physical activity. This is a great encouragement to the psychologist. Whenever he finds any man acting in any way, he can always ask himself the question which of these forces is impelling the man to act in this way? It must either be something which directly leads to his well-being or some thing which satisfies this or that instinct or the tendency to play or to imitate. We shall have an opportunity to study in a later chapter how the workings of these natural forces undergo a change during the life of the human being, and assume a form outwardly very different from the way in which they appear in a child's life for the first time. Before we pass on to a discussion of the

development in the working of these forces however, we shall study the various abilities of the psychophysical organism with which these forces have to co-operate in the life of the human being.

CHAPTER IV

THE ABILITIES OF MAN.

The realisation or existence of a tendency to do a certain thing implies the ability to do that thing. For example if there is a tendency in us to run away from danger we can run away only if we have the ability to run away. Similarly we can live only if we are able to live. We can play only if we are able to play, and we can imitate a certain act only if we have the capacity to imitate that act.

There must obviously be innumerable abilities in us as we do so many things in life. We have the ability to breathe, to digest our food, to make the blood circulate, to protect ourselves from danger, to defeat our enemies, to perceive the things around us, to make the things which we need, and to think and plan to satisfy our needs. But the question is whether there are any simple forms of ability which are limited in number, and which give rise to the great variety of distinct abilities by their combinations in different proportions. The question is, in other words, whether there is a new ability behind each activity of life or

Action implies
ability

The problem for
the Psychologists

whether there are a few simple abilities which can explain all the other activities. Are walking, jumping, dancing, reading, writing, making shoes, hats, clothes, drawing, building etc. etc. all different abilities, each separate and independent of the others; or are there some few abilities which can account for all these activities, and which are such that if they are found in a man they make him capable of doing all these things?

Psychologists have been hoping, and are now on their way to discovering, that there are a limited number of human abilities, which are responsible for all the activities of man. There is a certain ability, for example, which if found in any man, will enable him to add, subtract, multiply and divide; and the more of that ability is found in any man, the more efficiently he will be able to perform all these operations.

Recent researches in psychology have shown that there are at least four prominent abilities which can explain a number of natural aptitudes which people possess. They are (1) the mechanical ability, (2) the arithmetical ability, (3) the imaginative ability, and (4) cleverness. They are not the only innate abilities of man. But out of the many innate abilities of man, a definite clue has been found for the existence of these abilities. As to the rest, we are not yet in a position to say what other abilities there are which can explain a number of natural aptitudes and what

aptitudes are such that they are in themselves independent and separate innate abilities.

(1) *The mechanical ability consists in a man's being able to perceive and to think of space relations clearly.* If a man can perceive and understand the working of a machine more easily than others do, he possesses more of mechanical ability as compared with others. There are some people who can never understand how a certain wheel or a crank or a lever will work, when it is incorporated in a machine. Obviously they do not possess mechanical ability. There are others who can not only perceive, but clearly imagine the working of every part of a machine. They are the persons who are endowed with an extraordinary mechanical ability.

Great use is being made of this discovery in the present-day industrial world. There are a number of tests which are designed to measure a man's mechanical ability. It is in this way that young men are guided as to the choice of a profession. They are advised to take up a post in which mechanical skill is of great importance, only if they possess mechanical ability. Similarly, employers engage only those young men for mechanical posts who give evidence of mechanical ability. The result is that there are not so many misfits in the present-day industrial world as there used to be before.

(2) Another great ability, which helps a man to

The Arithmetical ability.

perform a number of tasks successfully, is the arithmetical ability. *A person is said to have arithmetical ability if he can add, subtract, multiply and divide in a spontaneous manner.* It has also been found that a person endowed with the arithmetical ability can also solve arithmetical problems more easily and more quickly than other people. In some cases the quickness with which they can correctly perform very elaborate arithmetical operations is at times marvellous. Those who possess great arithmetical ability can often imagine long rows of figures and can perform very difficult arithmetical operations without the help of pencil and paper.

Just as they employ the tests of mechanical ability for vocational guidance and vocational selection, so also do they make use of arithmetical tests for this purpose. There are some vocations, in which arithmetical ability is of very great use. In accountancy, for example, the arithmetical ability is of prime importance. But in the comparatively humbler duties of selling for cash also the arithmetical ability counts for much. It ensures correct and speedy arithmetical calculation and is of positive help to a man behind the counter.

(3) There are some people who can easily form images resembling sensations. When they are not perceiving an object, they can picture to themselves every detail of the absent object. This is due to the fact

The imaginative ability.

that they possess great imaginative ability. It is one thing to be able to remember past events. It is another to be able to imagine them vividly. We can think of an object even without having an image of that object. Some people nearly always think without imagining. They lack the ability to imagine. Other people who have a pronounced ability to imagine always think in vivid and clear images. They report that the objects of their thoughts stand out, as if bodily, before them. If it is an object of sight, the visual picture is before them. They can describe the various parts and characteristics of that picture by examining it as it stands before them. If it is a sound the auditory image appears clearly and vividly before them. They can reproduce the cadence, varying pitch and degrees of loudness of the sound by referring to their images.

It has been discovered as the result of tests and experiments that those people who possess good visual imagery also possess good auditory imagery. But there are also people who possess the one without the other. It does not mean that one man may have a very strong visual imagery without being able to imagine sounds at all. It only means that as compared with the vividness and clearness of visual images, his images of sounds are not at all vivid and clear. Nearly everybody possesses all kinds of imagery; and very often good imagery in one direction is accompanied by good imagery in other directions. But in some cases one particular kind of imagery pre-

dominates; while the others, though present, are not so prominent.

Tests of imagination are also of use now-a-days.



Creative imagination.

There are certain professions in which a vivid imagination is a great help.

There are others in which vivid images are a hindrance. A painter, an architect, a musician—all need vivid images. They cannot do their duty unless they can clearly imagine beforehand what they are going to produce. In most cases artists can reproduce very exactly on canvas what they have observed, perhaps but once. Very often inventions are due to the original images which occur to the inventors. Such images are called creative images. They are not images of the objects which the inventors have seen before. They are images corresponding to which no objects exist. They are the creations of the inventor himself. All the inventions must have been created in the imagination by somebody or the other before they were given to the world in the shape of inventions. *Imaginativeness therefore is the greatest requirement in the creative process known as invention.* An inventor must possess the ability to imagine vividly and distinctly.

(4) Perhaps the word (cleverness) is not the best term for the fourth ability in favour of whose existence evidence has been deduced by psychology. *Cleverness is described as the ability to switch or turn one's attention from*

-Cleverness

one activity to another, easily and quickly. It has been established that the psycho-physical organism possesses a sort of inertia, which prevents it from giving up the activity, in which it is engaged, immediately and passing on to another activity all at once. If, for example, we have been making figures like  for some time, it is not easy for us to begin making figures like  all at once. When we try to shift from the one activity to the other, there is always a tendency to go back to the first. It is due to this, that we want some time to elapse before we can efficiently begin another task after finishing one.

Some people, however, have the capacity to pass very quickly from one subject to another. They can also pass quickly from one line of thought to another. This gives them an advantage, for if they are thinking in a certain way, they can, whenever necessary, at once switch themselves off on to the line of thought followed by another man, or required by changing circumstances. They, therefore appear to be cleverer than other people. *They can understand certain things better* because they can easily give up their own line of thought and adapt themselves to the new line of thought.

It has been held that a high degree of this ability distinguishes the artists, poets and other men of genius from the philosophers and scientists. This ability is closely related to *humour* and *originality*. This

The role of cleverness in understanding.

Cleverness and perseverance.

is not the same ability which is called intelligence, and which we shall have the occasion to study presently. *This ability only consists in the presence of a low degree of inertia.* A person who does not suffer from a high degree of inertia can pass on quickly from one thing to another. Cleverness therefore, is a negative rather than a positive ability. It is the name given to a comparative absence of the *lag* or *perseverance* which are the two names of the same thing that we have called inertia.

Besides these four abilities there is also the capacity to *retain* the results of
 Retentiveness. psycho-physical activities. The organism is not a hard thing like a stone.

It is a plastic substance on which every activity leaves a trace behind. The plasticity of the psycho-physical organism is responsible for what is ordinarily known as retentivity. But it has been noticed that if a man shows a high degree of retentivity with regard to a certain ability he is not equally retentive as regards the other abilities. It has been discovered that some people can remember certain things while they cannot remember other things. Similarly some people can learn certain things more easily than others. *Retentiveness varies with the strength of our ability and psycho-physical dispositions.* If we have

There are special kinds of retentivity

the ability to do something, we can also retain that activity more than the other activity. Similarly, if we have a strong psycho-physical dis-

position towards a certain activity, we have a great retentiveness regarding that activity. But everybody possesses psycho-physical retentiveness in some direction or the other, in as much as every one can remember exceptionally well this or that or the other kind of things, and everybody can learn more quickly than others this, or that or the other thing.

Neither mechanical ability nor arithmetical ability, neither imaginativeness nor cleverness helps a man in performing every kind of activity. They are all special abilities in so far as they help a man to do certain kinds of things in an efficient manner. But psychologists talk of another kind of ability in the true sense of the word. All the activities which we have discussed imply perception or thinking. If a person possesses mechanical ability, he can perceive and think of mechanical relations of things. If a person has arithmetical ability, he can perceive and think of arithmetical relations easily and efficiently. Now, it has been discovered that *there is also a general ability to perceive and think of relations of all kinds. This general cognitive ability is called intelligence.*

Although intelligence has been described as cognitive ability, it is *nevertheless an ability to act efficiently.* This is due to the fact that, as we have seen before, all the activities of the psycho-physical organism work harmoniously and imply one

Intelligence and
cognition ability.

another. Consequently an activity to perform a certain task implies an ability to perceive and, in some cases, to think of certain relations among things. If we can successfully pass through a maze, it means that we perceive the special relations which are involved. Similarly, if we can successfully perform a mechanical operation, it means that we can perceive the mechanical relations which that operation involves.

Intelligence, therefore, is the general tendency to perceive all kinds of relations in things and consequently to perform all kinds of activities. It is for this reason that it is called the general ability of psycho-physical organism. We do not speak of intelligence in connection with those activities of the psycho-physical organism which do not involve perceptions or thoughts. But those activities which do involve cognition are not merely activities of perception and thinking, they are at the same time overt activities of the organism. No activities are wholly and solely cognitive

General ability has been made the subject of quantitative measurement more than any other ability of the psycho-physical organism. There are innumerable tests now in vogue for measuring the general ability of different people. Intelligence tests are used in schools to help the teacher in the proper classification of children. They are also used for selecting those children who should be placed in special classes.

Test of intelligence.

or schools organised for exceptionally dull or exceptionally brilliant children. Alongside the tests of special aptitudes, of which mention has been made before, intelligence tests are also used in the service of vocational guidance and vocational selection.

General ability, as opposed to special abilities, is such that *if a person excels in it, he can perform every activity more efficiently* than another provided he possesses the same degree of the necessary special aptitude as is possessed by the other. On the other hand, if a man lacks general ability, he will be inferior to another man in the performance of every activity, even if he possesses the same special aptitude as the other does. Suppose two men score equally high in the tests of mechanical ability. This means that they possess the same degree of mechanical ability. When it comes to the performance of a certain mechanical operation, by our two subjects, the one, who scores a high percentage in the tests of general ability, will be able to perform the same task more efficiently than the one who scores a low percentage in general ability.

It necessarily follows that even if a man possesses a special aptitude, he cannot excel in performance unless he possesses a high degree of general ability also. This is the reason that there are certain professions, in which, apart from the special aptitudes needed, a high degree of general ability is essential. In select-

The significance of possessing general ability.

The use of tests of general ability.

ing candidates for such professions, tests of general ability are of very great value. In most cases the candidates are tested for their general ability before they are taken into the Civil Service. Even while selecting candidates for other professions, intelligence tests are commonly used along with the tests of special aptitude. In many professions a certain degree of general ability is found to be essential. In other occupations a lower degree of general ability is considered to be sufficient. *A very low degree of general ability disqualifies a man for doing any work at all.* Such members of society are declared mentally deficient and fit subjects for mental treatment.

There are so many graduated scales of intelligence tests current in these days that it is not possible to give even the briefest account of all of them in the limited space at our disposal. The most frequently used scale of intelligence tests is that which is known as the Stanford Revision of the Binet Scale. A complete account of how these tests are to be employed is given in "The Measurement of Intelligence" by Professor L. M. Terman. We shall here give a summary of these tests. They are arranged in age groups. For each age there are five or six tests. They begin with the third year and go up to the eighteenth.

The Binet Scale.

Year 3.

1. Points to parts of body:—nose, eyes, mouth, 1.

2. Names familiar objects—key, penny, knife, watch, pencil.
3. Pictures—enumeration.
4. Gives sex.
5. Gives last name.
6. Repeats 6-7 syllables. (a) I have a little dog.
(b) The dog runs after the cat. (c) In the summer the sun is hot.

Year 4.

1. Compares lines.
2. Discrimination of forms.
3. Counts four pennies.
4. Copies a square.
5. Comprehension. What must you do (a) when you are sleepy; (b) when you are cold; (c) when you are hungry?
6. Repeats four digits. 4-7-3-9; 2-8-5-4; 7-2-6-1.

Year 5.

1. Comparison of weights—3 and 15 gms.
2. Colours. Red, yellow, blue, green.
3. Aesthetic comparison.
4. Definitions, use. Chair, horse, horse, fork, doll, pencil, table.
5. Patience, or divided triangle.
6. Three commissions. Puts key on chair, brings box, shuts door.

Year 6.

1. Right and left. R. hand L. ear; R. eye.
2. Mutilated pictures.
3. Counts 13 pennies.

4. Comprehension. What is the thing to do ;
 - (a) If it is raining when you start for school?
 - (b) If you find that your house is on fire?
 - (c) If you are going to some place and miss your car?
5. Coins. Nickel, penny, quarter, dime.
6. Repeats 16-18 syllables.
 - (a) We are having a fine time. We found a little mouse in the trap.
 - (b) Walter had a fine time during his vacation. He went fishing every day.
 - (c) We will go out for a long walk. Please give me my pretty straw hat.

Year 7.

1. Fingers. Number on R. hand : L. hand ; both.
2. Pictures, description.
3. Repeats 5 digits. 3-1-7-5-9 ; 4-2-8-3-5 ; 9-8-1-7-6.
4. Ties bow knot. Model shown.
5. Gives differences. (a) fly and butterfly, (b) stone and egg, (c) wood and glass.
6. Copies diamond shape.

Year 8.

1. Ball and field. (Inferior plan or better)
2. Counts backward 20 to zero.
3. Comprehension. What's the thing for you to do :
 - (a) When you have broken something which belongs to someone else ?
 - (b) When you are on your way to school and notice that you are in the danger of being late?

(c) If a playmate hits you without meaning to do it?

4. Similarities. (a) wood and coal; (b) apple and peach; (c) iron and silver; (d) ship and automobile.

5. Definition superior to use. (a) balloon; (b) tiger; (c) football; (d) soldier.

6. Vocabulary, 20 words.

Year 9.

1. Date; week, month, day of month, year.

2. Weights.

3. Makes change. 10-4; 15-12; 25-4.

4. Repeats 4 digits backwards. 6-5-2-8; 4-9-3-7; 8-6-2-9.

5. Three words in a sentence. (a) Boy, river, ball; (b) work, money, men; (c) desert, rivers, lakes.

6. Rhymes. Three rhymes for each word. (a) day; (b) mill, (c) spring.

Year 10.

1. Vocabulary, 30 words.

2. Absurdities.

(a) A man said, "I know a road from my house to the city which is down hill all the way to the city and down hill all the way back home."

(b) An engineer said that the more cars he had on his train the faster he could go.

(c) Yesterday the police found the body of a girl cut into 18 pieces. They believed that she killed herself.

- (d) There was a railroad accident yesterday, but it was not very serious. Only 48 people were killed.
- (e) A bicycle rider, being thrown from his bicycle in an accident, struck his head against a stone and was instantly killed. They picked him up and carried him to the hospital, and they do not think he will get well again.

3. Designs.

4. Reading and report.

New York. | September 5th. | A fire | last
night | burned | three houses | near the
centre | of the city. | It took some time |
to put it out. | The loss² | was fifty
thousand dollars, | and seventeen families
| lost their homes. | In saving | a girl |
who was asleep | in bed, | a fireman |
was burned | on the hands.

5. Comprehension.

- (a) What ought you to say when someone asks your opinion about a person you don't know very well?
- (b) What ought you to do before undertaking (beginning) something very important?
- (c) Why should we judge a person more by his actions than by his words?

6. Sixty words in three minutes.

Year 12.

1. Vocabulary, 40 words.
2. Abstract words, (a) pity; (b) revenge; (c) charity; (d) envy; (e) justice.
3. Ball and field. (Superior plan)
4. Dissected sentences.
(a) for the started an we country early at hour.
(b) to asked paper my teacher correct I my.
(c) a defends dog good his bravely master.
5. Fables.
6. Repeats 5 digits backwards. 3-1-8-7-9; 9-6-4-8-2; 5-2-9-6-1.
7. Pictures, interpretation.
8. Gives similarities. (a) snake, cow, sparrow. (b) book, teacher, newspaper. (c) wool, cotton, leather. (d) knife-blade, penny, piece of wire. (e) rose, potato, tree.

Year 13.

1. Vocabulary, 50 words.
2. Induction test. (Gets rule by 6th folding)
3. President and king, difference between.
4. Problems of fact.
(a) A man who was walking in the woods near a city stopped suddenly, very much frightened, and then ran to the nearest policeman, saying that he had

just seen hanging from the limb of a tree a _____

A what ?

(b) My neighbour has been having queer visitors. First a doctor came to his house, then a lawyer, then a minister. What do you think happened there.

(c) An Indian who had come to town for the first time in his life saw a white man riding along the street. As the white man rode by, the Indian said, "The white man is lazy; he walks sitting down." What was the white man riding on that caused the Indian to say he was sitting down.

5. Arithmetical reasoning.

(a) If a man's salary is 20 a week and he spends 14 a week, how long will it take to save 3000 ?

(b) If two pencils cost 5d, how many pencils can you buy for 50d ?

(c) At 15d a yard, how much will 7 feet of cloth cost ?

6. Clock. Reverse hands; (a) 6-22 (b) 8-10 (c)
2-46.

Year 16.

1. Vocabulary, 65 words.

2. Fables.

3. Difference between abstract words. (a) laziness and idleness; (b) evolution and revolution, (c) poverty and misery; (d) character and reputation.

(4) Problem of the enclosed boxes. One large box containing (a) 2 smaller 1 inside of each; (b) 2 smaller, 2 inside of each (c) 3 smaller, 3 inside of each; (d) 4 smaller, 4 inside of each.

5. Repeats 6 digits backwards 4-7-1-9-5-2; 5-8-3-2-9-4, 7-5-2-6-3-8.

6. Code. Writes, "Come quickly."

Year 18.

1. Vocabulary, 75 words.

2. Paper cutting test. Draws and locates holes.

3. Repeats 8 digits forwards. 7-2-5-3-4-8-9-6:
4-9-8-5-3-7-6-2; 8-3-7-9-5-4-8-2.

4. Repeats thought of passage heard.

(a) "Tests such as we are now making are of value both for the advancement of science and for the information of the person who is tested. It is important for science to learn how people differ and on what factors these differences depend. If we can separate the influence of heredity from the influence of environment, we may be able to apply our knowledge so as to guide human development. We may thus in some cases correct defects and develop abilities which we might otherwise neglect."

- (b) "Many opinions have been given on the value of life. Some call it good, others call it bad. It would be nearer correct to say that it is mediocre, for on the one hand our happiness is never as great as we should like, and on the other hand our misfortunes are never as great as our enemies would wish for us. It is this mediocrity of life which prevents it from being radically unjust."

5. Repeats 7 digits backwards 4-1-6-2-5-9-3;
3-8-2-6-4-7-5; 9-4-5-2-8-3 7.

6. Ingenuity test.

- (a) A mother sent her boy to the river to get 7 pints of water. She gave him a 3 pint vessel and a 5 pint vessel. Show me how the boy can measure out exactly 7 pints without guessing at the amount. Begin by filling the 5 pint vessel.
- (b) Same, except 5 and 7 given to get 8. (Begin with 5).
- (c) Same, except 4 and 9 given to get 7. (Begin with 4.)

The fables used in Ages 12 and 14 are entitled (a) Hercules and the Wagoner; (b) The Milkmaid and Her Plans; (c) The Fox and the Crow; (d) The Farmer and the Stork; (e) The Miller, His Son, and the Donkey. A score of two is given for a generalized interpretation, and a score of one for an interpretation that does not go beyond the characters in the fable.

The words used in the Vocabulary Test consist of two series of fifty words each. The idea of the test is to find out whether the child knows the words and not, whether the child can define them accurately. A word is considered correct if the subject shows he knows any meaning of the word, however poorly he may define it. The arrangement of the words in the list is from the very easy to the very hard.

In order to score, give the child the age of the year for which the child passes all the tests satisfactorily and add one-fifth of a year for each question which the child answers beyond that test. Suppose a child passes all the fourth year tests satisfactorily. He gets the mental age of four years to start with. For each additional question which the child answers beyond the fourth year test the child gets one fifth of a year. If, for example, he answers one question in the fifth year test and one question in the sixth year test he gets two-fifths of a year added to his mental age. His mental age, therefore comes to 4.4 years. By dividing this by his actual age we get the child's intelligence quotient.
$$\left(I. Q. = \frac{M. Age}{A. Age} \right)$$
 If this child is four years old his I. Q. is equal to $\frac{4.4}{4} = 1.10$. It is generally expressed as 110.

The instructions and the diagrams given in the appendix to this chapter will give the reader an idea as to how these tests are used.

APPENDIX TO CHAPTER IV.

INSTRUCTIONS

Year 3

1. Where is your nose. baby? Where is your eye? and so on.
2. Show the child a key, the penny or a knife etc. and ask "What is this?"
3. What is this that you see in this picture? What more? What more? etc.
4. Are you a little boy or little girl?
5. What is your name baby?
6. Ask the child to repeat after you whatever you say.

Year 4

1. Draw a line 5 cm. and one of 6 cm. parallel to one another about 3 cm. apart, and say to the child, "Tell me which is the longer of these two lines."
2. Show the child a circle, a square and a triangle, two at a time and ask him whether they are alike or different.
3. Put four pennies on the table and ask the child to count them.
4. Draw a square about an inch long and ask the child to copy it with pen and ink. Let him make three copies. Two at least should be free from bad curves and overlapping ends.

Thus A, B and C should be rejected, but D and E passed. (See figure 8).

5. Ask the child to repeat after you 4-7-3-9 etc.

Year 5

1. Which of these two boxes is the heavier? (small boxes of the same shape and size, but containing different quantities of shot or other material, should be used. Place the boxes about 3 inches apart in front of the child. The main point here is to note whether the child knows how to set about comparing weights.)
1. "What colour is this?" No failure must be allowed.
3. "Which of these two is the prettier?" Three pairs of drawings such as those given are to be used. Show them one pair at a time and do not point to either face. (See Fig 9).
4. "What is a chair, a horse etc?" Definition by usage should be possible at this age, e. g. a chair is to sit on.
5. "What is patience?"

OR

Procure two oblong pieces of card board of equal size. Cut one oblong diagonally. Place the two triangles thus obtained near the other oblong in this way: (See fig 10)

Say, "Put these two cards together," Pointing to the triangles, "So that they make a figure like this," pointing to the oblong.

6. Say to the child, "Here is a key. I want you to put it on that chair. On the chair you will see a box. Bring me that box. Then shut the door. Now listen again.....first put the key on that chair, then bring the box, then shut the door. All three orders must be executed and in the correct order.

Year 6

1. Show me your right hand. Show me your left ear. Show me your right eye.
 2. "Look at this face. What is left out?" (See Fig 11)
 3. Place 13 pennies on the table and ask the child to count them aloud, and to point out each penny as he counts it. No error should be made.
-
1. How many fingers have you in one hand? How many on the other hand? How many on both hands together?
 2. What is this picture about? What is this picture of?
 3. Listen and say after me just what I say.
 4. You know what kind of knot this is, don't you? It is a bow-knot. I want you to take this other piece

of string and tie the same kind of knot around my finger.

5. What is the difference between a fly and a butterfly? You know flies? Do you not? You have seen flies? And you know the butterflies. Now tell me the difference between a fly and a butterfly.

6. I want you to draw one exactly like this. Make it exactly like this one.

1. Let us suppose that your baseball has been lost in this round field. You have no idea what part of the field it is in. You don't know what direction it came from, how it got there or with what force it came. All you know is that the ball is lost somewhere in the field. Now, take this pencil and mark out a path to show me how you would hunt for the ball so as to be sure not to miss it. Begin at the gate and show me what path you would take. No; you must mark out your path with the pencil so that I can see it plainly. But suppose you have not found it yet. Which direction would you go next?

2. You can count backwards, can you not? I want you to count backwards for me from 20 to 1, Go ahead. No, I want you to count backwards from 20 to 1, like this: 20-19-18, and clear down to one. Now, go ahead.

4. I am going to name two things which are alike in some way, and I want you to tell me how they are alike.

In what way are they alike?

5. What is a balloon?

6. I want to find out how many words you know. Listen and when I say a word you tell me what it means. What is.....? You know what a bonfire is. You have seen a bonfire. Now what is a bonfire?..... I don't understand: explain what you mean.

Year 9

1. What day of the week is it today?

What month is it?

What day of the month is it?

What year is it?

2. See these boxes. They all look alike, don't they? But they are not alike. Some of them are heavy, some are not quite so heavy, and some are still lighter. No two weigh the same. Now I want you to find the heaviest one and place it here. Then find the one which is just lighter and put it here. Then put the next lighter one here, and the next lighter one here and the lightest of all at this end. Do you understand? Remember now, that no two weights are the same. Find the heaviest one and put it here, the next heavier here, and lighter, lighter, until you have the very lightest here. Ready, go ahead.

4. (a) If I were to buy 4 cents worth of candy and should give the store-keeper 10 cents, how much money would I get back?

(b) If I bought 12 cents worth, and gave the store-keeper 15 cents how much would I get back?

(c) If I bought 4 cents worth, and gave the store-keeper 25 cents, how much would I get back?

4. Listen carefully, I am going to read some numbers again, but this time I want you to say them backwards. For example, if I should say 1-2-3, you would say 3-2-1. Do you understand? Ready now; listen carefully, and be sure to say the numbers backwards.

5. You know what a sentence is, of course. A sentence is made up of some words which say something. Now, I am going to give you three words and you must make up a sentence that has all the three words in it. The three words are:..... Go ahead and make up a sentence that has all three words in it.

6. You know what a rhyme is, of course. A rhyme is a word that sounds like another word. Two words rhyme if they end in the same sound. Understand? Take the words 'hat' and 'cat'. They sound alike and so they make a rhyme. 'Hat', 'cat', 'bat', 'rat', all rhyme with one another.

Now I am going to give you a word and you will have one minute to find as many words as you can that rhyme with it. The word is:..... Name all the words you can think of, that rhyme with:..... Now you have another minute to name all the words you can think of that rhyme with:.....

Year 10.

1. I want to find out how many words you know. Listen and when I say a word you tell me what it means. What is.....? You know what.....is. You have seen a..... Now what is a.....?.....I don't understand, explain what you mean.

2. I am going to read a sentence which has something foolish in it, some nonsense. I want you to listen carefully and tell me what is foolish about it.....What is foolish about that?

3. This card has two drawings on it. I am going to show them to you for ten seconds, then I will take the cards away and let you draw from memory what you have seen. Examine both drawings carefully and remember you have only ten seconds.

4. I want you to read this for me as nicely as you can.....Very well done. Now, I want you to tell me what you read. Begin at the first and tell every thing you can remember. And what else? Can you remember any more of it? Tell me in your own words all you can remember of it.

6. Now, I want to see how many different words you can name in 3 minutes. When I say ready, you must begin and name the words as fast as you can, and I will count them. Do you understand? Be sure to do your very best and remember that just any words will do, like clouds, dog, chair, happy,..... ready; go ahead. Go ahead as fast as you can. Any words will do. Counting not allowed. You must name separate words. Go ahead.

Year 12

2. What is.....? What do you mean by? Yes, but what does it mean to.....some one?

4. Here is a sentence that has the words all mixed up so that they don't make any sense. If the words were changed around in the right order they would make a good sentence. Look carefully and see if you can tell me how the sentence ought to read.

5. You know what a fable is? You have heard fables. A fable, you know, is a little story, and is meant to teach us a lesson. Now I am going to read a fable to you. Listen carefully and when I am through I will ask you to tell me what lesson the fable teaches us. Ready? Listen.

What lesson does that teach us? Here is another. Listen again and tell me what lesson this fable teaches us.

7. Tell me what this picture is about. What is this a picture of? Explain this picture—Go ahead, explain what you mean.

8. I am going to name 3 things which are alike in some way, and I want you to tell me how they are alike. In what way are they alike?

Year 14

2. How many holes will there be in the paper when it is unfolded?.....Now, when we folded it in this way and tore out a piece, you remember it made one hole in the paper. This time we will give the paper another fold and see how many holes we

shall have.....When we folded it in this way there were two holes.....Now, I am folding it again. How many holes will it have this time when I unfold it?.....When we folded it this way there was one hole, when we folded it again there were two, when we folded it again there were four, when we folded it again there were eight, when we folded it again there were sixteen: now tell me how many holes there will be if we fold it once more.

3. There are three main differences between a president and a king. What are they?

4. Listen, and see if you can understand what I read.

5. (a)—If a man's salary is 20 Dollars a week and he spends 14 Dollars a week, how long will it take him to save 300 Dollars?

(b)—If 2 pencils cost 5 cents, how many pencils can you buy for 50c.?

(c)—At 15 cents a yard, how much does 7 feet of cloth cost?

6. Suppose it is 6-22 o'clock, that is, 22 minutes after 6; can you see in your mind where the large hand would be, and where the small hand would be?.....Now, suppose the two hands of the clock were to change places, so that the large hand takes the place of the small hand and the small hand the place of the large hand. What time would it then be?

Fables.

A. HERCULES AND THE WAGONER

A man was driving along a country road, when the wheels suddenly sank in a deep rut. The man did nothing but looked at the wagon and called loudly to Hercules to come and help him. Hercules came up, looked at the man, and said "Put your shoulder to the wheel, my man, and whip up your oxen." Then he went away and left the driver.

Lesson..... Heard before?.....

B. THE MILKMAID AND HER PLANS.

A milkmaid was carrying a pail of milk on her head, and was thinking to herself thus: "The money for this milk will buy 4 hens; the hens will lay at least 100 eggs; the eggs will produce at least 75 chicks; and with the money which the chicks will bring I can buy a new dress to wear instead of the ragged one I have on." At this moment she looked down at herself, trying to think how she would look in her new dress; but as she did so the pail of milk slipped from her head and fell to the ground so that the milk was spilt. Thus all her imaginary schemes perished in a moment.

Lesson..... Heard before?.....

C. THE FOX AND THE CROW.

A crow, having stolen a bit of meat, perched on a tree and held it in her peak. A fox, seeing her, wished to secure the meat, and spoke to the crow

thus: "How handsome you are! and I have heard that the beauty of your voice is equal to that of your form and feathers. Will you not sing for me, so that I may judge whether this is true?" The crow was so pleased that she opened her mouth to sing and dropped the meat, which the fox immediately ate up.

Lesson.....Heard before?.....

D. THE FARMER AND THE STORK.

A farmer set some traps to catch cranes which had been eating his seed. With them he caught a stork. The stork, which had not really been stealing, begged the farmer to spare his life, saying that he was a bird of excellent character, but he was not at all like the cranes, and that the farmer should have pity on him. But the farmer said: "I have caught you with these robbers, the cranes, and you have got to die with them."

Lesson.....Heard before?.....

E. THE MILLER, HIS SON, AND THE DONKEY.

A miller and his son were driving their donkey to a neighbouring town to sell him. They had not gone far when a child saw them and cried out: "What fools those fellows are to be trudging along on foot when one of them might be riding!" The old man, hearing this, made his son get on the donkey, while he himself walked. Soon they came upon some men. "Look," said one of them. "See that lazy boy riding while his old father has to walk." On hearing this the miller

made his son get off, and he climbed upon the donkey himself. Farther on, they met a company of women who shouted out: "Why, you lazy old fellow, to ride along so comfortably while your poor boy there can hardly keep pace by the side of you!" And so the good natured miller took his boy up behind him and both of them rode. As they came to the town, a citizen said to them: "Why, you cruel fellows you two are better able to carry the poor little donkey than he is to carry you." "Very well" said the miller, "We will try". So both of them jumped to the ground, got some ropes, tied the donkey's legs to a pole, and tried to carry him. But as they crossed a bridge the donkey became frightened, tried to kick itself loose, and fell into the stream.

Lesson..... Heard before?.....

VOCABULARY—Score.....

Time begun.....Time Finished.....

Time required.....

- | | |
|------------------|---------------------|
| 1. gown..... | 1. orange..... |
| 2. cap..... | 2. bonfire..... |
| 3. scorch..... | 3. straw..... |
| 4. puddle..... | 4. roar..... |
| 5. envelope..... | 5. haste..... |
| 6. rule..... | 6. afloat..... |
| 7. health..... | 7. guitar..... |
| 8. eyelash..... | 8. mellow..... |
| 9. copper..... | 9. impolite..... |
| 10. curse..... | 10. plumbing..... |
| 11. pork..... | 11. noticeable..... |
| 12. outward..... | 12. muzzle..... |

- | | |
|----------------------------|------------------------|
| 13. southern | 13. quake |
| 14. lecture.. | 14. reception. |
| 15. dungeon | 15. majesty |
| 16. skill | 16. treasury |
| 17. ramble..... | 17. misuse..... |
| 18. civil | 18. crunch..... |
| 19. insure | 19. forfeit..... |
| 20. nerve | 20. sportive..... |
| 21. juggler | 21. apish..... |
| 22. regard | 22. snip..... |
| 23. stave | 23. shrewd..... |
| 24. brunette | 24. repose..... |
| 25. hysterics | 25. peculiarity..... |
| 26. Mars | 26. conscientious..... |
| 27. mosaic | 27. charter. |
| 28. bewail | 28. coinage |
| 29. priceless..... | 29. dilapidated..... |
| 30. disproportionate | 30. promontory |
| 31. tolerate | 31. avarice |
| 32. artless | 32. gelatinous |
| 33. depredation | 33. drabble |
| 34. lotus..... | 34. philanthropy..... |
| 35. frustrate..... | 35. irony |
| 36. harpy..... | 36. embody..... |
| 37. flaunt..... | 37. swaddle..... |
| 38. ochre. | 38. exaltation |
| 39. milksop. | 39. infuse |
| 40. incrustation..... | 40. alderman. |
| 41. retrogression | 41. declivity |
| 42. ambergris..... | 42. laity..... |
| 43. achromatic..... | 43. fen |

- | | |
|-----------------------|-----------------------|
| 44. perfunctory | 44. sapient. |
| 45. casuistry | 45. cameo..... |
| 46. piscatorial. | 46. theosophy |
| 47. suderific | 47. precipitancy..... |
| 48. parterre..... | 48. palaeology..... |
| 49. shagreen..... | 49. homunculus..... |
| 50. conspiracy..... | 50. limpet..... |

Note.—To get the entire vocabulary, multiply the number of correct definitions by 180, if both lists are given; if only the first list is given, multiply by 360. If only one list is given, multiply the number of correct definitions by 2 to get the score.

CHAPTER V.

LEARNING.

It is the natural forces or instincts which prompt us to act and the natural ability which determines the way in which we carry on the psycho-physical activities. But the *psycho-physical organism is plastic*. When it has done something the activity leaves its traces behind. The organism is not like a stone which may be shifted from one place to another without any permanent change being made in its structure. The psycho-physical organism is of such a nature, that whenever it performs a certain activity, the activity leaves more or less permanent marks on it, so that when the organism performs the next activity, the effect of the previous activity to a certain extent determines the nature of the subsequent activity. If a child has thrown a ball on the ground for the first time and then taken it up and thrown it on the ground a second time, the second throw is not exactly the same as the first throw. The second throw is what it is on account of the first throw and the previous experiences of the child.

It, therefore, follows that *the innate dispositions which lead us to activity* are constantly being modified by the very activities which they prompt. In some

Plasticity of the organism.

Acquirement of dispositions.

cases the modifications are imperceptible. In other cases they are well marked. So much so, that it appears at times a new disposition has been formed in us. The baby, for example has a natural tendency to cry when it is refused food. Now, suppose that a child is always bottle-fed. Whenever the child sees the bottle he finds that he gets food. If this practice is continued long enough the child will begin to cry even if the empty bottle is snatched from him when he is hungry. The bottle has taken the place of the milk so far as the cry is concerned. In the beginning there was a disposition in the baby to cry whenever milk was refused him. Now the baby cries when the bottle is refused him. It appears as if a new disposition has been formed in the baby, of which the object is the bottle. The disposition to cry if the milk is removed when the child is hungry is a *natural* disposition. The disposition to cry if the bottle is removed when the baby is hungry is an *acquired* disposition.

The whole of our life is a play of dispositions natural and acquired. Whatever we do is either the effect

Entire life activity is determined by dispositions.

of the activity of a natural disposition or the effect of the activity of an acquired disposition. In most cases both the natural and the [acquired dispositions are active; particularly is this case for some time after birth. When the baby acts for the first time in its life, probably the activity is prompted by a natural disposition; but the second activity of the baby is a result of a natural disposition [modified by the first

activity of the child. In so far as the disposition is not acting in its natural form it is acquired.

When the baby perceives something for the first time in its life, it does so because of this natural tendency or that. The child perceives i.e. is conscious of the nipple for the first time because it has the instinctive tendency to obtain food. But when the child perceives the

Our perceptions are determined by our natural and acquired dispositions.

nipple for the second time, its perception is due partly to the innate disposition to obtain food and partly to a disposition created in the child by the first exercise of its natural disposition. If the perceptions of a newly born baby are so complex, it can easily be imagined how complex would be the perceptions of bigger children and grown-up individuals. It can easily be realised that our perceptions of the objects around us, although each time determined by some innate psycho-physical disposition or the other, are a net result of the cumulative dispositions acquired as the result of having perceived those and similar objects so often before.

Whenever an activity is performed, it leaves behind a disposition in the psycho-physical organism. When the same activity is repeated, the performance is the result of that disposition along with an innate disposition. The second performance leaves a disposition behind it, which is not the same disposition as that left by the first performance. In as much as the second performance was not the same as the first perfor-

Cumulative dispositions.

mance, the disposition left by the second performance could not be the same as that left by the first performance. The second performance was different from the first performance because it was due to a natural disposition plus the acquired disposition left by the first performance. The third performance, therefore, although perhaps called by the same name as the first and the second performances, is a performance which is different from either. It is not the result of an innate psycho-physical disposition alone. Neither is it the result of the innate disposition and the disposition left by the first performance. It is the result of the innate disposition and the disposition left by the second performance. It is, in this way,

the result of a more complex disposition than the dispositions which had prompted the second or the first performance of the activity. Such complex dispositions are known as *cumulative dispositions*. There is no end to the complexity of cumulative dispositions in human life. All life activities are determined by the play of innumerable cumulative dispositions.

It may be possible to enumerate the natural dispositions of the psycho-physical organism. But it is impossible to arrive at a full knowledge of the acquired dispositions of any organism. *They are innumerable.* Behind every action, every perception, and every thought there are a number of cumulative dispositions. Every activity of the psycho-physical organism leaves a

disposition behind it and there are perhaps millions of activities which a man performs in his life-time.

But all activities that we perform do not leave after effects which are equally strong. Which activities leave strong after-effects? A small child may try to lift a bright object from the ground. He may

perform a number of unsuccessful activities. Then he may succeed. The next activity will be determined more by the disposition left by the successful activity than by the dispositions left by the so many unsuccessful ones. The reason is that a psycho-physical disposition is a peculiar thing. *It gives us a pleasurable feeling when a psycho-physical disposition is successful. We get a feeling of unpleasantness when any of our psycho-physical dispositions meets with failure.* If a child is trying to lift an object from the ground, a certain psycho-physical

The law of feeling. disposition is active in him. That disposition is satisfied when the child does lift up the object. So long as the child is trying to lift the object but is unsuccessful, the psycho-physical disposition is being thwarted. The activities which are unsuccessful do not, therefore, give him the pleasure which the successful activity does. It is a law of the working of the psycho-physical organism that whenever a disposition is satisfied, it gives us pleasure and whenever it is thwarted it gives us displeasure.

It is easy to see the usefulness of this natural law. Nature sees to it that what is useful for us may be ingrained in us and that which is of no use may be

The usefulness of this law.

rejected. Hence *a strong disposition is created for the performance of any activity which is pleasant*: while the dispositions formed by the activities which are unpleasant are by no means so strong. This does not mean that the unsuccessful activities do not leave any after-effects. The unpleasant activities also leave certain traces behind, particularly if they are performed for the first time. But as compared to the after-effects of the successful activities, the after-effects of the unsuccessful activities are quite insignificant except when the activities are the first attempts of the organism.

We have seen that every human activity is the outcome of the play of a number of dispositions both natural and acquired. This is why *every activity of a man is different from every other activity of the same man*, although a number of his activities may be called by the same name. The same child may perceive the same nurse again and again. All his perceptions are called the child's perceptions of the nurse. But just as the different throws of the same ball by the same child in the same manner from the same height are not exactly the same, in the same way the different perceptions of the same nurse by the same child are not exactly the same. Each subsequent perception is different from the previous perception, in so far as the last perception has in some way modified the cumulative disposition which is responsible for the perception of the nurse by the child.

We cannot perform exactly the same activity twice.

The same is the case with the activities of grown-up individuals. My perception of a book in the evening is not exactly the same as my perception of the same book in the morning. Between the first perception of the book and the second perception of the same book I have been alive. In as much as I have been alive I have been psychophysically active. Each activity of my organism has left a disposition behind it. These dispositions have modified the structure of my organism. The result is that the disposition which gives rise to the second perception is not exactly the same disposition as that which gave rise to the first perception. The first disposition itself was complex. But the second is still more complex.

The same thing applies to thought and imagination. Our thought of an object at this moment is not exactly the same as our last thought of the same object. In many cases it may appear that our thoughts about certain things are exactly the same whenever we think of those things. But just as we cannot bathe twice in the same water in a running stream similarly we cannot think the same thoughts twice. Just as much water has flowed between the two baths in the same stream, in the same way much activity has taken place between any two perceptions or ideas. Hence we cannot have exactly the same perception more than once. A single activity of the psychophysical organism is enough to modify the struc-

ture of the organism, not to speak of a string of activities. As the structure of the organism changes, the nature of its dispositions is modified, and as the dispositions change, the activities brought about by them must necessarily change.

When we have a psycho-physical disposition to perceive an object or to act in a particular way we are said to be interested in

that object or in that action. As dispositions are either natural or acquired, our interests also are of two kinds, (1) natural and (2) acquired. (1) If we have a natural tendency to perceive mechanical relations and perform mechanical operations we are said to be *naturally* interested in mechanics and mechanisms. (2) If, on the other hand, we have been watching mechanical operations and performing mechanical jobs and a disposition is consequently formed in us for the perception of mechanical relations and the performance of mechanical activities, we are said to have *acquired* an interest in mechanics.

Dispositions, natural or acquired, and consequent interest in certain kinds of objects and certain activities are very important from the point of view of learning. Teaching is only possible when the child pays attention to the teacher and since attention is conditioned by interests, it is to interests themselves that we must turn in our attempt to develop attention. As a matter of fact, *all learning consists in forming acquired dispositions and creating new interests.* An acquired disposition and a new interest; however,

must always start with an innate disposition. All acquired dispositions are formed round some innate disposition or the other. In the beginning we do something because we have a natural tendency to do that thing. It is only when we satisfy that natural tendency that an acquired tendency can be formed. We cannot learn anything if the learning process itself does not tend to satisfy some previously existing disposition in us. A child, for example, is naturally

The law of learning. interested in playing. His play motive may happen to be excited by some operation which is useful for him to learn. The tendency to play will induce the child to perform that activity. As he goes on performing the activity again and again, acquired dispositions will be formed in him round those activities, and he may become interested in the activities themselves. Thus acquired dispositions may be built up in him round his natural disposition to play. It is another law of the working of the psycho-physical organism that *acquired dispositions form themselves only in close connection with innate dispositions. This law is of extreme importance from an educational point of view.* The teacher should always aim at the formation of wholesome acquired dispositions in the pupils, if he wants them to learn anything. In order that he may do so, he must first excite a natural disposition in them and then help them to build acquired dispositions round it. He must create new interests in the pupils, which is possible only if he

The usefulness of this law to the teacher.

can excite some old interest and tag the new ones on to the old one.

We have seen that all learning consists in the forming of new dispositions. This is true of every thing that we learn, in school or out of the school. If we have learnt the alphabet, we have formed a disposition to repeat all the letters if the first letter occurs to us. At a higher stage the learning of the alphabet may mean the disposition to think of the name of the letter as soon as it is presented to us, and *vice versa*, to point to the letter as soon as the name of the letter is given to us. The acquired disposition is thus the cause of the ability to recognise the letters of the alphabet, to repeat them in the right order and to point to them whenever asked.

Learning, therefore, does not mean storing knowledge

The wrong theory of learning. *in our heads as we store goods in a store-house.* Perceptions and ideas are not material things that they can be stored with safety. Nor is our mind a material thing, like a box or a strong room, where things can be stored. When we know a thing it does not mean that we have absorbed it into us and that we can do anything we like to it. What we have in us is not the object but only a disposition with respect to that object. If we know a friend's face for example, we do not have the face of the friend stored in our mind; nor do we have a constant thought or idea of that friend's face.

This will be clear from the fact that if we try to think of that face as clearly as possible, we shall find that we are unable to describe all possible details about that face. We are

Learning does not mean remembering every detail.

unable to give the exact shape of the nose or mouth. We cannot give the exact distance between the eyes, the exact size of the nose or the exact colour of the face. All that we can do, when we hear the name of the person is to have a certain idea—the thought of the person; or when we perceive the face, to think of and speak out the name of the person; or else when we think of the person to picture to ourselves the face as a face, without being able to give exactly the proportions or the colours and contours. In other words what we have in us is a certain disposition for doing something or thinking something or imagining something and nothing more.

Repetitions of the psycho-physical activity are of

The place of great use in the formation of acquired dispositions. It was once supposed that repeating a certain

The place of repetition in learning.

lesson again and again was the only method of learning it. Practice, they said, makes a man perfect. It is true in a sense that practice is necessary for learning anything, in so far as, the more you repeat an activity the stronger is the trace which it leaves behind it. But *it is wrong to suppose that practice is the only key to learning.* Practice, on the other hand, is sometimes a hindrance rather than a help. Practice is useful only when it gives us a chance of

improving upon each repetition. Mere practice does not make a man perfect. But practising an activity is good because it affords an opportunity to improve. The more we can repeat any activity, the more is there a chance of our improvement.

The psycho-physical organism never repeats anything. When one does anything the second time, one does not do it in exactly the same way as one did it for the first time. To compel a child, therefore, to repeat anything perfectly mechanically is to make him do something which is directly opposed to his nature. If however, one repeats an activity with a view to *improving* it every time that it is repeated one learns considerably by such repetitions. But if somebody repeats something mechanically, while his mind is somewhere else, he has nothing to gain by such repetitions. On the other hand, he unnecessarily fatigues his organism and wastes his time.

It follows, therefore, that ten minutes of practice with full zeal is more useful from the point of view of learning than one hour's work done unwillingly, in order to avoid displeasing the teacher. The best work is that work, in which the worker is keen to do his best and gets a peculiar enjoyment at every improvement in his task. Any work done in an idle unenthusiastic manner, just in order to pass away the inconvenient hour is entirely unprofitable and in many cases injurious to the pupil

Repeating.—
Mechanical repetition is, unnatural :

The process of learning does not only consist in the formation of new dispositions. It is a complex activity and involves at least three distinct operations (1) the formation of new dispositions : (2) the elimination or inhibition of the undesirable dispositions which may be possessed by the learner : and (3) a combination of a number of old dispositions into a system. This last is also known as *integration* or *co-ordination*.

Whenever we want to do anything there is a tendency for the whole of our organism to be active. Consequently we make a number of movements which are entirely useless. In order to be able to perform the task efficiently *we must get rid of or inhibit these useless movements.* In learning to write, for example, we have to omit the twitchings, the overpressures, and the random pushes and pulls. Similarly we have to get rid of fidgetting, worry, and the distraction caused by the loud noises etc which may be going on around us.

If we want to learn how to write, we may first learn how to make single parts of single letters. Later on we may begin to combine the different parts of the letters into whole letters. Then we may learn to combine a group of two or three letters into one whole. We may write the two or three letters in one continuous movement of the pen. Something like this takes place in every other kind of learning. When we

learn to ride a bicycle, we learn to perform a number of appropriate movements. But all these movements are combined into a total single activity which we call riding a bicycle. *The various activities are integrated or co-ordinated or arranged into a system and make up one whole activity*, which is performed by us at one stroke and in which the whole of our organism takes part. We adopt a certain attitude and live our life for the moment in a peculiar manner.

The integration of all the activities of the psycho-physical organism in the act of learning is of great importance from an educator's point of view. Every lesson and every task that we learn provides us with a means for giving a definite direction to our life and forming our character in a definite way. For example, when we learn to write, we do not only learn how to write; but we also learn what to do when we have to perform an activity like writing. We learn what attitude to take up, how to control the activity of our muscles, and how to control our perceptions and thoughts whenever we have to perform activities in which we have to use similar tools and to adopt similar bodily postures. In learning how to write we also learn how to apply ourselves to any task successfully.

Habits like neatness, efficiency, honesty, calmness and reasonableness cannot be secured by exercising them separately or by hearing lectures on their advantages

The teacher and the bye-education They can only be secured by exercising them

repeatedly or in particular tasks that we learn. Each one of these virtues can be exercised in learning how to prepare for an examination, how to behave on a journey, how to deal with our school fellows etc etc. There can be no separate and independent method of learning these things of themselves. The teacher, therefore, whose duty it is supposed to be to teach certain subjects to his pupils, is also expected indirectly to help the children to acquire habits like cleanliness, efficiency, thoroughness etc by helping them to form the appropriate dispositions.

The upshot of the whole thing is that we do not generally acquire simple dispositions to perform simple activities. We acquire dispositions for acting in a complex manner when we are placed in a complex situation. Every act of learning is the formation of such complex dispositions ; and a good teacher is he who sees that his pupils acquire, as far as possible, dispositions which are of a general nature. He should see that while his pupils learn how to read or write, as for example, they should as a matter of fact learn how to do all such things as resemble reading and writing in the best and most successful manner.

The capacity to form general dispositions differs in different persons. Perhaps everybody can form a simple disposition like that of drawing a straight line. But it is only the person who is

The relation of
general learning
to general ability.

endowed with a high degree of general ability who has the capacity to form dispositions of a general nature. If any intelligent man learns how to form letters or how to draw a straight line he also learns, at the same time, what attitude to adopt while performing actions of this type in general. If he subsequently applies himself to learning how to draw or write he will find it easier for him to learn to do these successfully. The reason is that while learning to write or to draw he has already learnt a part of all those operations which are akin to these performances.

It is said that an intelligent man learns more than an unintelligent man, because while the latter only perceives certain objects with which he has to deal and their simple relations, the former perceives the more complex relations, which the less intelligent person fails to perceive. From this point of view intelligence or general ability, consists in the capacity to perceive relations. The more intelligent the man, the more complex are the relations which he can perceive and understand.

Given that the pupil possesses the necessary degree of intelligence, it is the duty of the teacher to put the pupil in such a situation that he may be in a position of advantage for the formation of the right kind of dispositions. To a very great degree, it depends on the efficiency of the teacher whether the pupils under his

Teaching consists in devising the situations appropriate for the formation of the proper kind of dispositions.

charge acquire the right sort of dispositions or not. Suppose a teacher is teaching the alphabet to a class of small children. He is helping the children to form very undesirable dispositions, if he makes them repeat the alphabet again and again in a mechanical manner. Even if the child does acquire the capacity of repeating the whole of the alphabet as soon as the first letter occurs to him, this disposition is of no practical use to him. What the child needs is not an ability to repeat the alphabet, without hesitating, from A to Z, but the ability to know which letters enter into a word, to know his room or his seat from the letter marked on it, or to know the section of a class from the big letter outside the room. It is the duty of the teacher, therefore, to devise situations which would not allow the disposition to repeat the alphabet mechanically to form in the pupils, but which will help the more useful dispositions to be formed in them.

It has been much discussed in this connection

The whole and the part methods of learning. whether children should be encouraged to commit to memory a poem

by reciting the whole of the poem again and again, or by committing each stanza to memory one by one and then reciting all the stanzas one after the other. The first method is called the whole-method and the second method the part-method. It has been discovered that some children profit more by the whole method, while others

more by the part method. In some cases one kind of disposition is found to be more efficient, in others the other kind.

But, as a result of large-scale testing, they have found that *by far the greater number of pupils find the whole-method to be superior.* Perhaps this method is psychologically more economical.

Much energy is wasted in first learning the stanzas one by one, and then connecting them in a particular order. If a poem is learnt by the part method, after finishing each stanza there is the tendency to go back to the first word of that stanza; and a further effort has to be made to connect the last words of each stanza with the first words of the next stanza. If, on the other hand, a poem is learnt by the whole-method this additional labour is saved. Besides, if a poem is learnt by the whole-method, there is formed one complex disposition for the recitation of the whole poem. It is psychologically much more efficient to form one complex disposition than to form a number of simpler dispositions. Hence *the whole-method is better than the part-method.*

But there is a certain type of material for which the whole-method is not suitable. That is the material in which the various parts of the whole task to be done are not logically connected. In a material like this the whole method is obviously less economical. It is wasteful in as much as it implies

the formation of certain dispositions which are not of any use. The disposition, for example, to pass from one part of the whole to the next part is of no use where the material is made up of disjointed parts. *It is the nature of the material therefore, which should determine whether the whole or the part method should be employed in learning it.*

There is another question which has been much discussed in connection with learning. The problem of spreading the repetitions. This question does not concern itself with what kind of dispositions should be encouraged but which is the best method of creating certain disposition. Suppose we have to commit a certain piece to memory, the question is whether we should try to learn it all in one day by reciting it again and again, or whether we should spread the recitation over a number of days. In other words, is it better to complete the recitations, necessary to commit the piece to memory, in one day, or to recite it once or twice every day, and thus take several days over committing the piece to memory?

It has been found that *to spread the learning over several days is more efficient than to attempt the entire learning in one day.* It is better to spread the repetitions. Thus, if a student has to commit a poem to memory during a given week, it would be better for him to repeat it four times on each day of the week than to repeat it twenty times on the last day of the week. Perhaps the twenty repetitions in one

day are not so useful because the learner gets fatigued before he comes to the twentieth repetition, and therefore does not profit by the last few repetitions at all. Perhaps the learner loses all interest in the same by repeating it too often; and the result is that the situation becomes disadvantageous for the formation of permanent dispositions.

Psychologists speak of another fact also which may be at work in this case. They say that *the dispositions* which are set up by any activity *are being consolidated, even when the activity is not being performed*. While we are not reciting the poem, our organism is making the new disposition a part and parcel of itself. The greater the time we give to the formation of a disposition, therefore, the stronger and more efficient will be the disposition. The less the time we give it for consolidation the less efficient and the weaker will it be.

We have seen that tendencies to perform certain activities go hand in hand with the abilities to perform them. When the child is able to stand up, he has a tendency to stand up. It is only when he has the ability to run that the tendency to run arises in him. The same thing holds true of acquired dispositions. Alongside with the acquirement of dispositions we also acquire the abilities corresponding to them. As we repeat the lines of a poem we acquire the disposi-

tions to repeat those lines without reading them, and alongside with it we also acquire the ability to repeat them in this way. If we have learnt a piece of poetry it means that we are able to repeat it.

We have noticed some of the important hereditary abilities of man, of which the most important is that which is known as general ability or general intelligence.

We acquire ability as we learn.

But as we live, we acquire a number of abilities which are not innate. Most of the abilities which come to our notice are acquired. They are the modifications and integrations of the natural abilities. The ability to sing a song, for example, is an ability which is acquired, though it centres round certain natural abilities. A person who can sing a song must have possessed a natural ability to produce the different notes. He must have also possessed a natural ability to perceive relations of time. What he has done in acquiring the ability to sing is to have formed a disposition to think of the notes in a certain order and to have developed his sense of time to such an extent that he can properly regulate the rhythm, which runs through the tune. All other abilities which we admire in different men are acquired in the same way. *Whenever we form new dispositions we acquire new abilities. Modifications of dispositions are accompanied by the development of abilities.*

C. H. Rice.

CHAPTER VI

THE STATES OF THE LIVING ORGANISM.

We have seen that the life of man is nothing but a play of the various dispositions in him—both natural and acquired. What we do at a particular time depends only on what dispositions are active at the time. If a person has no disposition at all to perform a certain action, it is not possible for him to perform that action although it may be possible for him first to form the necessary disposition and then to act in accordance with that disposition.

At any moment it is only a few of our psycho-physical dispositions which are active. But we have a *number* of psycho-physical dispositions in us. Although all those dispositions are not active at any particular time, their very presence in us in some way colours all that we do. I may not be thinking at this time that I am a man, that I have lived through innumerable situations in life, that I have acquired such and such a knowledge, that I am at present engaged in such and such an undertaking etc; but that which I am doing at this moment I am doing because every incident of my past life has left a trace in me and the system of dispositions so produced is at the back of all my activities.

Even when I am not perceiving or thinking of certain things and not doing certain. But they determine our activities all the same— acts I have the disposition to perceive or think of those objects and to perform those actions. These dispositions make all the difference in my life-activities. If I were not a teacher in a College, I would not be doing, what I am doing now, in the way in which I am doing it. If I had not read a certain book or thought a certain thought, my activities at this moment would not be exactly what they are. Perhaps, if I had not done what I did in the morning, I would not be acting in exactly the same way, at this moment, in which I am acting. *Every little thing that we do and every single thought that we think leaves its effect behind and determines our subsequent conduct.*

But all the dispositions are not equally active at every moment in our life. There are numerous dispositions which remain dormant at every time. Their presence in some way [determines what a man will do but they do not take an active part in his actions at all moments. That I can [teach psychology perhaps determines my conduct at this time, but the disposition to teach is not active at this moment in so far as I have no tendency to teach at this time. I may have a strong disposition to get angry if somebody offends me, but the disposition is not active at this moment in as much as nobody is offending me. At any time in our life there are a certain number of disposi-

By their very presence.

tions which are playing an active part and leading us to do what we do. A vast multitude of dispositions always remain dormant. Their presence determines what we do and the way in which we do it, without their being actively engaged in what we are doing.

It is on account of this that, without thinking of what we are, what time of the day it is, what kind of weather it is, what we have to do after finishing the work in hand etc etc, we have some sort of knowledge of all these things, while we are busy doing something with which that knowledge is not directly connected. That knowledge is there all the time, whether we bring it to the fore-front or not.

While I am dictating this piece I know that I am so and so, that I am seated on a chair, that I am dealing with such and such a topic etc etc. But this knowledge is not set clearly before me, while I am dictating this. What is clearly before me is the sentence which I am speaking and the thought which I am trying to explain. All the other things occupy the background of my field of cognition. My thought will at once be directed to them if a sudden change takes place in them. I may not be thinking of the lamp which is illuminating the room. But the moment the light becomes dimmer or brighter I at once perceive it. The lamp does not occupy the focus

The dispositions
which give us the
back-ground of
knowledge.

Attention.

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of my awareness, but only the margin or the outer zone of the field of it. Such a state of the psychophysical organism is called the state of attention. *In the attentive state of the organism some dispositions are clearly and forcibly excited, while others remain dormant* and exert only an indirect influence on the cognition of the moment.

When with an effort we keep our innumerable dispositions from functioning so actively

Active attention. that the few dispositions relating to the task, in which we are engaged, may be excited with all the greater energy, we are said to be in a state of active attention. *In the state of active attention we are not at the mercy of the strongest disposition which may happen to be excited at the time.* While I am dictating this I do not allow many tendencies to get the upper hand of me. I may have a tendency to go out into the fresh air. But I check it. In the same way I am also checking the tendencies to think thoughts which are irrelevant to my present purpose. If the thought of the College, or my friends, or my hobbies has a tendency to appear, I check it there and then, and think of only those thoughts which are relevant to my purpose. I may have a tendency to use a difficult word or to use an intricate metaphor. But I check that tendency and dictate only the simplest language that I can find and adopt the easiest method that I can think of.

A state of mind like this is called reflective. Reflection

And reflection. *is the typical state of active attention.*

While we are reflecting, we are always selecting. We are always rejecting certain modes of thinking and acting, and adopting certain other ways. Reflection implies an important stage in the development of the psychophysical organism. If we can reflect, it necessarily follows that we can think of objects which are neither present nor form part of a whole, of which another part is present.

In the early stages of development such ideas are not possible. A baby can perhaps think of the whole object which he is perceiving even if some parts of the object are not present to his senses. *He perceives wholes of which only parts are given to him.* If for example, he hears the voice of his mother, he knows that the mother is there. The shape of the mother is not before him. Still he knows that the mother is present. The sound of the mother does not mean to him a something which is separate from her shape. He does not think that he is hearing the sound and that the person who makes this sound has such and such a shape. He only knows the sound as the mother. While he hears the sound he knows the sound, the shape, and all—the total mother. He cannot separate the sound from the shape and the shape from the feel of the mother.

If the baby has any idea of the shape of the mother

Tied Idea. when he is not seeing her, the idea is tied to the sound of the mother.

It is not a separate and independent idea. When the baby is lying in his bed, he does not picture to himself the mother working in the kitchen or sitting in the next room. He perceives the situation as a motherless situation. When he hears or sees or touches the mother, he perceives the situation as the presence-of-the-mother situation. *Separate and independent ideas of absent or imaginary objects are called free ideas. The very small child does not have free ideas.* He only possesses tied ideas, if he possesses any ideas at all. The appearance of free ideas marks an important stage in the development of the organism.

Now, in the reflective state we think in terms of free ideas. While dictating this book, I have occasion to think all sorts of thoughts, whose objects are not present to my senses even in the remotest way. I think of objects which are neither themselves before me nor form part of any wholes of which some parts are present to my senses. This is the essence of the reflective state of the organism. Thinking of free ideas and keeping them effortfully before us is the chief activity of the reflective state.

Suppose in the presence of a man of excitable temper somebody does something which the excitable person hates. The excitable man's face at once becomes red. Perhaps he begins to abuse and possibly, strike the man who

does the objectionable thing. Probably his whole body begins to tremble and he also begins to perspire. Later on he will tell you that when he was giving vent to his anger he felt very hot and experienced a peculiar sensation. Such a state of the organism is called an emotional state. *Emotion is*

Emotion—a
typical state of
passive attention

the typical state of passive attention as
reflection is the typical state of active
attention. The angry man does not
make an effort to perceive the off-

ender. He has such a strong disposition against the kind of thing that the offender is doing that he passively takes notice of the deed. He attends to it without making any effort whatsoever. He gets hot and trembles and perspires spontaneously. Equally effortlessly he, perhaps, takes hold of a stick and be-

which takes pos-
session of us,

labours the helpless victim. *The cha-
racteristic feature of the emotional
state is that the emotion takes posses-*

sion of the man. The angry man, the man who is bewildered by fear, the man who has fallen deeply into love, is helpless. He is led by his instinctive disposition. He loses all control of himself. He does not know what he is doing.

Another important feature of the emotional state of the organism is that *a number of*
disturbances are going on inside the
body. The blood changes its mode
of circulation. The stomach ceases
to digest the food. The ductless glands either work

is accompanied by
internal disturb-
ances.

more forcefully and mix a greater amount of their secretions with the blood, or cease to work at all. The duct glands are also disturbed in their functions and begin to work abnormally. The man in an emotional state may perspire or cry. (1) and intense feeling. Organic disturbances, (2) tremendous force of natural dispositions and (3) the consequent intensity of feeling are the three great characteristics of the typical state of passive attention, namely emotion.

An emotion always comes suddenly like a storm.

But it does not pass away so suddenly.

Mood—a weaker form of emotion.

Very often it continues for quite a long time in a weaker form. After a man has passed through a fit of anger, he continues in an angry mood for a considerable time afterwards. Whatever is disliked by him during that time excites his anger and even those things which pleased him otherwise do not please him for a considerable length of time. *A mood is described as an emotion long drawn out.*

Every emotion is prompted by a strong instinctive tendency and consequently gives rise to an intense feeling. The feeling is pleasant if the disposition is being satisfied during the state of emotion; it is unpleasant if the instinctive tendency is being thwarted during the state of emotion. As the natural disposition more or less spends itself in the emotion, it loses most of its strength. The result is that the

mood which supervenes on an emotion is not excited by a strong instinctive tendency. As a consequence *the feeling which colours the state of mood is very mild* as compared with that which colours the state of emotion. Perhaps the organic disturbances which characterise an emotional state continue in the state of the mood that follows; but they are not at all so prominent in a mood as they are in an emotion.

Sometimes we fall into a mood without first passing through a state of emotion.

Moods without emotions. In most cases it is due to the fact that the organic disturbances which characterise a certain emotion are brought about by a physiological cause. Sometimes we suffer from constipation, or an irregular circulation of the blood, or a deficient secretion of some glands. The result is that when we get up in the morning, we find ourselves in a peevish or excitable mood. *The mood does not take possession of us as the emotion does; but it colours all our activities without exception.* Whatever we perceive, whatever we think of, all is coloured by the mood of the moment.

There are moods corresponding to every emotion, as there are emotions corresponding

A list of instincts and corresponding emotions and moods.

to every instinctive disposition. The following table shows some of the important instinctive tendencies and their corresponding emotions and moods:—

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<i>Instinct</i>	<i>Emotion</i>	<i>Mood</i>
Defence	Anger	Retaliation
Fear	Terror	Timidity
Amativeness (tender emotion)	Love	Affectionateness
Gregariousness	Nostalgia	Sympathy
Self-assertion	Elation	Superiority
Self-subjection	Humility	Inferiority
Curiosity	Wonder	Inquisitiveness

In our waking life there are always some dispositions which are very active, while there are others which, although they exert their influence on the present state of the organism, are not actively engaged. Their very presence in the organism makes all the difference. It is due to the presence of such dispositions that we know our bearings, while we are awake, although we may not be thinking of what we are and how we are. This is the reason why in our waking-state of life we cannot reconcile ourselves to any thing which runs counter to the store of dispositions which we have in us. If a man occupies a respectable position in society he would not think of doing anything which a respectable man should not do, although he may not always be reminding himself that he is a respectable man. If a man has once made up his mind not to do a certain thing, he may not think of doing that thing at all, without having it clearly before him that he had

made such a resolution at such a time. Innumerable examples can be given of the activities which are determined by the dispositions that are not active at the time of the performance of those activities.

This is not the case in dreams. In a dream we often forget what we are. In a dream
The Dream State. a beggar may think that he has become an emperor and an emperor that he is a beggar. The reason is that in the dream-state only those dispositions count which are active, and there are very few dispositions which are active at the time of dreaming. The rest of *the stock of dispositions* somehow or the other, *loses its influence on the present state of the organism*. The dispositions, so to say, also go to sleep as the man goes to sleep. Some one disposition is somehow excited and results in the thoughts and images which tend to satisfy it. If the tendency to get rich becomes operative in a dream, the man thinks that he is a millionaire. If the tendency to enjoy natural scenery gets uppermost, the man believes that he is roaming in the hills and forests while he is actually enjoying a rest in his bed.

The dream state is, therefore, described as a one-idea state. In dreams, ideas come one after the other. There are no dispositions which remain in the background to check any of the ideas for which there is a tendency to appear. Every wish is consequently fulfilled and every tendency

why are dreams
inconsistent with
the waking state

satisfied in the dream. There are counteracting dispositions in the waking state which make it impossible for any and every disposition to get fulfilment. In the waking state the beggar cannot think of his being a prince because the innumerable dispositions which swarm his psycho-physical organism are contrary to this idea. When he is asleep, on the other hand, these dispositions do not exert their influence at all; and the consequence is that as soon as the thought of becoming a prince passes through his mind, he finds himself a prince. There is nothing to compare his present state with. In the waking state a man may think himself to be a king for a moment but the next moment rudely reminds him of his real position. *There is nothing to shake our belief in our dreams.*

As reflection is the typical state of active attention, and emotion the typical state of passive attention, *Dream—a state of the dream state is the typical state of inattention.* *of inattention.* Whenever we are attentive we have a double set of dispositions exerting their influence on our activities. Some dispositions are actively engaged, while others act merely by their presence or by a very meagre excitation. *In the state of inattention, on the other hand, only a single set of dispositions determines the state of the organism.* Very often there is not more than one disposition which is responsible for the ideas of a state of inattention. The consequence is that while in a state of attention, active or passive, there is a double set of ideas present at one and the same time, whereas in the state of inattention ideas come in single file.

Reflection is, however, *not the only state of active attention*. We are in a state of active attention when we are trying to follow the intricate thought of a confused speaker. We are in a state of active attention when we are trying to distinguish between the various notes, the tones and the overtones, which make up a musical sound. We are in the state of active attention when we are trying to analyse the ingredients of which an article of food consists. We are in a state of active attention when we are looking through a microscope and trying to study the minutest details of a small particle of some substance. Innumerable examples of the same kind can be given without much difficulty.

Similarly *emotion is not the only state of passive attention; nor dreaming of inattention*.

Other states of passive attention and of inattention We are in a state of passive attention whenever a loud noise or a bright light attracts our notice. We are in a state of passive attention when we follow a crowd without thinking where we are going. The child, who does as the other children do, and goes where they go, is in a state of passive attention. Likewise, we fall into the state of inattention even when we are not asleep. If we lie down comfortably and let our thoughts wander at our sweet will, we are in a state of inattention just as we are when we are dreaming. Day-dreams are also states of inattention like the dreams which we dream while we are asleep.

CHAPTER VII.

THE GROWTH OF THE LIVING ORGANISM.

We have seen what the various forms of psycho-physical activities are, what forces impel them, what abilities the psycho-physical organism possesses and in what states the working of the psycho-physical organism possesses and in what states the working of the psycho-physical organism manifests itself. But all the forms of activity, all the forces, all the capabilities and states of the psycho-physical organism do not make their appearance as soon as a child is born. *At the time of birth the activities and the abilities of the child are but limited.* The child perceives an object or so. It is impelled by the instinct of hunger alone. It is capable of crying on perceiving the mother or the nurse and managing to obtain the food that it wants, provided it is close to the mother or the bottle. And that is about all.

As the child grows, higher and higher forms of activity make their appearance, more and more forces come into operation, greater and greater abilities manifest themselves, and more and more complex states of the organism encompass the child.

They say that *during the first two or three years the child learns more than he does during the rest of his life.* Most of the acquired dispositions which help the child to cope successfully with his

The importance of the first few years of a child's life.

environment, when he grows up, are formed in the earliest years of childhood. It is during this period that the child learns to recognise most of the things which he has to deal with in his life. It is during this time that he learns most of the actions which he has to perform to keep himself alive. Perhaps it is during this time that he learns the names of the most important objects round about him.

Still, all the forms of psycho-physical activity are not indulged in by the child in the first two or three years of his life. He does not make use of free ideas so far as the evidence grows. All the instinctive tendencies are not operative in the beginning. There seems to be no trace of tender emotion (amateness) or self-subjection. It need not be added that a child of two or three is very poor in what it can accomplish. Some people erroneously think that the small child can do nothing. This is obviously wrong in as much as the small child keeps its organism going, perceives certain objects and reacts to them in a certain way. But as compared to a grown-up man the abilities of a child are decidedly very meagre. As to the states of the psycho-physical organism, we can say with confidence that the child attends passively and dreams.

It is one of the characteristic features of childhood that *active attention is not possible at that period of life*. Whatever disposition gets the upper hand in a child, succeeds in bringing about its activi-

The abilities of a child below three.
Active attention does not appear before the age of six years or so.

ty. The child cannot control or check its dispositions as a grown up man can. If a child is offended he gives expression to his anger. He does not think whether it is or is not appropriate for him to get angry at the time. As he does not think in terms of free ideas, he is confined strictly to the present and acts spontaneously as the objects present to his senses lead him to act. Perhaps this state of affairs lasts up to the age of six or seven years.

During this period the attitude of the child is mostly the play attitude. *He does not adopt the work attitude before he attains the age of eight or nine years.*

Up to the age of eight or nine the child is engaged in his bodily activities only. Perhaps some images begin to arise soon after the child is about three years old. But there is a peculiarity about the child's imagery. *The images of childhood are very vivid.* So much so that they cannot be distinguished from percepts. The child who imagines himself to be riding a horse, while he is only riding a stick does not realise that while he is a real thing the horse is only a toy. He, therefore, insists on feeding the horse and giving it shelter from heat and cold. This fact explains most of the falsehoods of children which are far from being deliberate.

The instincts which are most prominent in childhood up to the age of about eight or nine are *fear, anger and curiosity.*

Other characteristics of children below nine.

The curiosity of the child is peculiar. It is satisfied by an imaginary expla-

nation. He may ask difficult questions but does not expect satisfactory and scientific answers to them. He will be perfectly satisfied if the answer appeals to his imagination. His attitude being that of make believe he does not question the reality or unreality of any thing whatsoever. This is the reason why children take great pleasure in fables and fairy tales.

Like play, *imitation* plays a very important part in the life of a child up to the age of about eight or nine. He imitates nearly everything which he perceives round about him. He imitates the actions of adults without understanding their meaning or significance. The activities of grown-up people are perceived by the child and enveloped by the wealth of imagery that he possesses. The images of his own creation and the activities of grown-up men, which he perceives, together provide the child with a stock for his play-activities.

After the child has attained the age of six or seven he begins to concentrate his attention, though for a very brief duration of time. But in the beginning his attention is fixed only on his bodily activity and not on his thoughts. It is at this age that the child becomes keen on acquiring skill. Whenever he is confident of success he imitates the skilfull activities of his elders. He also begins to feel that he has succeeded or failed in his attempts.

Active attention probably begins in a rudimentary form at about the age of seven.

From six to nine years the range of the child's ideas becomes wider and wider. He is inclined to think of those objects which are not present before him. He takes a delight in listening to the descriptions of other countries and observing pictures and models of things which he has not seen. In his games the spirit of *competition* reveals itself. He takes a pleasure in beating other children in running or hopping. At this age the child has not the tendency to play combined games, the games which are known as the "group games." Perhaps the spirit of the group (*esprit de corps*) has not yet made its appearance. The child thinks of his own success or failure and not of the success or failure of his side or his team. His outlook on life is mainly individual and not social. Perhaps the instinct of *self-assertion* has manifested itself but not the instinct of *gregariousness*.

The social tendencies undergo a marked development after the age of nine. The child takes more interest in group games. There is competition but the competition between group and group is more attractive than the competition between individuals. *Esprit de corps* is most marked at this age. The child is even prepared to make a sacrifice for the sake of the group to which he belongs.

Free ideas also begin to appear at this age, and the child begins to compete with others.

But 'esprit de corps' does not appear till after the age of 9.

Another prominent feature of this period is that the child has a *marked tendency to collect* all sorts of things. The Other features of the age after nine. pockets of children of this age are generally full of odds and ends.

They collect old stamps, rare coins, birds' eggs and what not. *Imitation and curiosity* are still very active. But they are not satisfied in the simple way in which they were satisfied before the age of six years or so. The child of seven or eight years does not only imitate mechanically but tries to do in his own way what he perceives older people doing. The child begins to imitate their modes of thought and feeling. The result is that between the ages of six and nine, children are very susceptible to the influence of others. If they admire some one they begin to copy his mode of living, thinking, and feeling.

In satisfying their curiosity, children of seven or eight years of age begin to make use of their *reasoning power*. Reasoning Power and free ideas begin to be made use of. *Free ideas* are used more frequently than they were at a more tender age.

If a question arises or a problem crops up, the child looks for a reasonable answer or solution. Children at this age take special interest in solving all sorts of puzzles. They are not satisfied with an imaginary solution of a puzzle which would have satisfied them a couple of years before. *They want a real solution of the puzzle with which they have begun to grapple.*

This brings us to a very important aspect of growth in human life. It is at this age that the *Sentiments begin to be formed.* instinctive tendencies begin to change their mode of operation. With the advent of free ideas *the instinctive tendencies begin to be attached to ideal objects.* A natural instinctive tendency is a tendency which is excited by a certain object when it is present to the senses. The instinct is aroused when we find ourselves in a certain situation. It does not attach itself to an object as such, whether it be present or not. A small child for example may fear a person who is shouting. But at this age if a person is always observed shouting, the instinctive tendency of fear becomes attached to the very thought of that person. Even if he is not shouting at any moment, that does not make him any the less an object of fear. When he is not present the very mention of him may arouse fear in the child. This is the beginning of what the psychologists have called a sentiment.

A sentiment is not an innate tendency like an instinct. *Sentiment is an habitual attitude of mind towards any object or group of objects or towards an abstract idea.* It is a tendency which is the result of the modification of an instinct by experience. *It involves the presence of ideas,* while an instinct works without the intervention of any ideas at all. The instinct of fear is only a possibility of the emotion of fear being aroused. It does not refer to any particular object or objects. Nor can it be excited without the

object of fear being perceived. A sentiment, on the other hand, is a tendency which *does not result in a state of emotion*. For the sentiment being aroused it is not necessary that the object or the situation should be perceived. Even an ideal object or situation may excite a sentiment.

The fear of a teacher, for example, who is in the habit of giving vent to his anger is a
 Example of a sentiment. It is not only a tendency for the emotion of fear being produced. It is a tendency which is connected with a particular object—the excitable teacher. It is a sort of relation between the pupil and the teacher. The pupil is not only possessed of the instinct of fear but he has acquired the fear of the teacher. He is afraid of the teacher when the latter is actually angry afraid is afraid of him when he is present but is not angry. He is also afraid of him when he is not resent at all.

The most important aspect of the growth of the psycho-physical organism consists in the modification of instincts into sentiments. The *formation of sentiments is a kind of learning* in so far as it consists in the modification of innate tendencies. *Sentiments are acquired dispositions*. They centre round certain objects or certain classes of objects. Sometimes they centre round certain ideas. They imply co-ordination and integration of actually existing dispositions as all learning implies. Love, hate, mercifulness, cruelty, respect for certain persons or things or ideas, conscientious objections, religious beliefs, etc etc are all senti-

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ments. They are formed as a result of the modification and integration of the instinctive tendencies.

Sentiments begin to form at about the age of nine or ten. But in the beginning they are of a rudimentary form. The fear of an excitable uncle or teacher is a sentiment of this kind. But the other sentiments which we have named above are much higher. Their objects are mostly ideal objects. The religious sentiment, for example, has for its object a being whom nobody has seen. The respect for certain beliefs is also a sentiment of this kind.

Full-fledged sentiments take shape only after the child has attained the age of twelve.

The importance of the age of 12. This is a very important time in the growth of the individual. Generally the outlook on life changes some time between the ages of twelve and fourteen. New impulses arise in the child. Children develop a peculiar feeling of attraction at this age for the members of the opposite sex. All the most important sentiments which guide our activities in after-life have their beginnings at this age.

But sentiments go on developing much after the age of twelve. At least *up to the age of twenty-four sentiments continue undergoing important developments.* Even after this age certain sentiments may undergo a change. But the changes which occur after

Most of the sentiments are formed between the age of 12 and 24.

the age of twenty-four are few and far between. They are not at all so important as the changes which go on between the age of twelve and twenty four. Sentiments of a higher type are being developed during this period of life.

Sentiments are formed round all the human instincts.

Examples of higher sentiments The fear of God, the fear of loss of reputation, the fear of being guilty of insincerity are all sentiments which are formed mainly round the instinct of fear, although other instincts also play a part in these sentiments. Righteous indignation is a sentiment which is formed chiefly round the instinct of anger. Fanaticism, patriotism and humanitarianism are sentiments which are formed chiefly round the instinct of gregariousness. But the most important sentiments of all are those which centre round the instinct of self-assertion.

There are a number of sentiments which have their origin in the instinct of self-assertion but most of them combine nearly all the other instinctive tendencies in some form or the other. These sentiments are known as the *self-sentiments*. There is quite a hierarchy of them. Some of them are comparatively higher, others comparatively lower; but *their central idea is the 'self.'* They determine our conduct and character in life.

Suppose a child is inclined to stay at home when it is time for him to start for school. He may be

afraid of the teacher's cane and hurry to the school. This action of his is determined by the sentiment of fear for the teacher.

Suppose he thinks and says to himself "Why should I be punished for nothing?" Then he makes

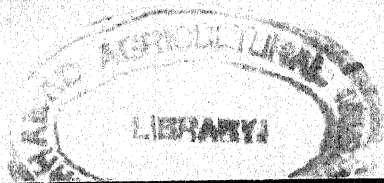
The various
levels of the
self-sentiment.

up his mind to set off for the school.

This action is determined by a rudimentary sentiment of self. He thinks of himself and does not regard the contemplated action as consistent with his idea of himself. But the self-sentiment is still founded on the fear of punishment. It is the lowest sentiment of the self. *The child thinks of himself as one who should not be the object of another's wrath.*

Suppose the child is reminded of his perfect regularity in the past and thinks of a possibility of getting a prize for regularity at the end of the year and at once makes up his mind to go to school. In this case the self-sentiment is higher and more complex one. *He thinks of himself not only negatively as he does in the previous case, but also positively as a person who should win the approval of his elders.* But in both these cases the child's idea of himself is rather crude which needs further development.

Suppose the idea entertained by the child was that if he did not attend school, his father would be sorry and those who heard of his idleness would blame rather than praise him. Here the self-sentiment is



of a still higher order. *The child thinks of himself as a person on whom are turned the eyes of the other people.*

Suppose the child remembers that on that particular day a literary contest is coming off between his group and another group. He realises his duty and sees the possibility of his side being defeated in his absence. This impels him to attend the school even when he is not inclined to do so. This is quite a high type of self-sentiment. *"The child thinks himself as an important member of his group for which he is prepared to sacrifice his own inclinations.* The self, of which he thinks, is not his individual self but his social self.

But suppose that the child is not prompted to go to school by any of the considerations enumerated above. He does not think of punishment or reward, father or class etc., but says to himself "I should be ashamed of myself to idle away my time here, while my duty is to go to school". In this case *the child thinks of himself as a person to whom duty is more important than anything else.* What he ought to do is not determined by any fear of punishment, any hope of reward, or any possibility of the pleasure or the displeasure or approval or disapproval of others; but by what it is right and proper for him to do. This is the highest idea of self that one can have. The child goes to school because he thinks that, being what he is, it is not consistent with his self-respect to stay away from

school and idle away his time. This highest sentiment of self is also known as self-respect.

That which we ordinarily call *character is the existence of the sentiment of self-respect.*

Character.

The man of character has self-respect.

He does a thing because he comes to the conclusion that it is his duty to do such a thing. A person of weaker character would be led away by the future prospect of loss or gain. A still weaker man would be misled by fear or punishment or hope of reward. A person who has no character at all would be led only by the impulse of the moment. He is the slave of his instincts and has not controlled them in the sense of having made sentiments of them.

It is an important psychological fact that *instincts cannot be killed.* It would be a very foolish thing to attempt to annihilate our instincts. The instincts are the forces of the psycho-physical organism and no psycho-physical activity would be possible if they were destroyed. But it does not mean that we should always be the slaves of our instincts and fall into the states of emotion into which our instincts have a tendency to throw us. *What we should do is to modify the working of the instincts, to turn them from instincts into sentiments.*

Instincts must be made good use of.

Instincts are the forces of the psycho-physical organism and no psycho-physical activity would be possible if they were destroyed. But it does not mean that we should always be the slaves of our instincts and fall into the states of emotion into which our instincts have a tendency to throw us. *What we should do is to modify the working of the instincts, to turn them from instincts into sentiments.* Instincts are on their way to be converted into sentiments the moment we begin to reflect at the time when they are excited. If the instincts take possession of us, in a state of passive attention, the result is a typical emotion. If we do not lose ourselves before the force

of our instincts, but assert ourselves by attending to the situation actively and by reflecting, the instinct fails to throw us into an emotional state; and the next time the same instinct invades us its working is of a very different character.

All the sentiments which may result as a modification and integration of instincts *are not necessarily good.*

A sentiment may be unrighteous.

Some of the sentiments may be of a positively evil nature. For example, we may acquire a hatred of charity or a love of bullying. These sentiments are not desirable from a social point of view. A man's character is determined by his sentiments, of which it is an expression. There are good as well as bad characters in society. Hence there are good as well as bad sentiments. Psychology however, has little to do with the moral value of a sentiment. What it is concerned with is the nature of the formation of sentiments. All sentiments are formed on the same principle as is followed by learning. No sentiments are possible without the instinctive tendencies, just as no learning is possible in the absence of natural dispositions. The formation of sentiments consists in the acquirement of new dispositions just as learning does. The dispositions, which we call sentiments have a force to impel us to activity as the instincts have. The instincts, therefore, are not the only forces of human activity. A man may be impelled either by an instinct or by a sentiment.

But it should be remembered that all sentiments are ultimately based on instincts. The urge behind a sentiment is the urge of the instinct, of which the sentiment is a modification. But outwardly the sentiment is a disposition which is very different from the instinctive disposition. The instinct works in the state of passive attention and takes possession of us. It gives rise to a number of organic disturbances and produces a state of emotion. The sentiment, on the other hand, puts us in a state of active attention, gives us an opportunity to reflect and think over the pros and cons of the situation. We do not lose control of ourselves when we are led by a sentiment, but have the situation well in hand.

The instinct is therefore, a lower motive to action when compared with sentiment. All the best deeds are performed because the heroes are led by their sentiments and not by their instincts. The essential characteristic of development is the doing away with the possibility of a brute, forceful, emotional state. In the beginning the child passes from one emotion to another. But when he grows up, he controls his instincts and acts calmly and composedly. The task of a good teacher consists in seeing that the child does not fall a prey to his emotions, but that the right sort of sentiments are being formed in him.

As we have seen, the process of the formation and development of sentiments goes on at least up to the age of twenty four. Generally new

Sentiments and
Instincts distinguished.

The characteristics
of the age
after 24.

sentiments are not formed after the age of twenty four. They say that there sets in, what is called, *old fogeyism*. We begin to think and act in the way in which we have been accustomed to think and act. By the age of twenty four we have formed our own method of doing everything and solving every kind of problem. We attack every difficulty in the same way and hope that the methods which have succeeded in the past will also succeed in the future. So much so, that we are very suspicious of the success of any new methods.

It does not, however, mean that no improvement is possible after the age of twenty four. Perhaps one learns up to the time of one's death. But what one learns after the age of twenty four is nothing as compared to what one learns before that age. Particularly after a certain age, when senility sets in, one learns very little indeed. An old man labours under the illusion that he has nothing to learn but everything to teach. No one can say when exactly old age sets in from a psychological point of view. In some cases it appears as early as fifty-five or sixty. In other cases it may not come before a few days or a few hours before death. In some cases senility may not appear at all.

But if senility does appear the person becomes old in the true sense of the word. He believes in everything that is old and condemns all that is new. Apart from forming new sentiments, he does not even permit his

old sentiments to be modified in the slightest degree. He lives much behind the times and disbelieves everything that is up-to-date.

We have thus seen that the span of a man's life can be roughly divided into seven periods—though different from the seven ages of Shakespeare:—(1) the period of infancy, up to the age of two or three (2) The period of early childhood from the age of two or three to that of about six or seven, (3) Childhood from the age of six or seven to the age of about nine, (4) late childhood from the age of about nine up to the age of about twelve, (5) Adolescence from the age of about twelve to the age of about twenty four, (6) old fogeyism from the age of about twenty four up to such time as old age appears, and (7) senility or old age.

CHAPTER VIII.

INDIVIDUAL DIFFERENCES.

The place of each man in the society in which he lives is determined by the way in which he differs from the other individuals of that society. One of the characteristic features of recent psychology is the great emphasis which it places upon individual differences. One individual differs from another in a thousand and one ways; so much so that no two individuals are exactly alike. One man may differ

from another in the structure of one or more parts of the organism, in the strength of the forces of human activity, in the possession of the various abilities, in the mode of the working of the organism or in the way in which it has grown.

We have seen that the various parts of the psycho-physical organism work harmoniously together. When, for example, a man perceives that he is

The harmonious functioning of the organism.
in danger he has a peculiar feeling, he prepares himself for flight or for fight, his stomach ceases to digest his food, his heart beats faster, he breathes faster, some of his glands begin to secrete more than they usually do and the others cease secreting altogether. It is the whole of the organism which is in a state of fear and not this or that part of the organism. It is not possible for one part of the man to be afraid and the other to be bold and brave. Whatever is done by the organism is done by the whole of the organism and each part supplements the work begun by any other part.

If, therefore, individuals differ from one another, they differ in the structure and the working of the whole organism. The whole of one man's organism is of one kind while the whole of another man's organism is of a more or less different nature. The consequence is that one man's behaviour is different from the other man's behaviour. But for the sake of

Ways in which individuals differ.

convenience and with a view to the study of the mental processes by means of mental analysis, we may divide the individual differences into the following five roughly distinguishable classes:— (1) differences in the structure of the organisms, (2) differences in the intensity of the forces of activity, (3) differences in the various abilities of the organisms, (4) differences in the mode of the functioning of the organisms and (5) differences in the way in which the organisms have developed.

(1) Each man differs from the other in *body-build*.

Body-build and
social attitude.

There are short men and tall men, fat men and lean men, fair men and dark men, broad-featured and fine-featured men etc etc. It might be erroneously supposed that the build of the body has nothing to do with the so called psychological activities of the man. It is, at this stage, difficult to lay down the exact laws according to which the structure of the human body affects the psycho-physical activities. But two things are clear beyond doubt. In the first place, the tallness or the shortness in size, the beauty or the ugliness of the features, the attractiveness or otherwise of the form, have an important bearing on the attitude which the man adopts, as regards his surroundings and his fellow beings.

According to some psychologists an extra-ordinarily tall person has in him more of self-assertion than the average man, and an extra-ordinarily short person less than the average. According to others a tall

man is less self-assertive, because he realises his superior position and sees no reason to assert himself. On the contrary, he acquires a submissive mode of behaviour to counteract the effect of his being tall. For the same reason a short man is more self-assertive than an average person. He makes more fuss and tries to make his existence felt, so that his short size may not relegate him to obscurity. Whatever may be the precise effect of a man's size, it is true that bodily stature is not irrelevant from the psycho-physical point of view. The same argument applies, *pari passu*, to the differences in beauty and ugliness, attractiveness and unattractiveness etc.

- (2) Although all the instincts are found in every man, *each instinct is not equally strong in every person*.

People differ in the relative strength of the various forces of activity.

In some persons some instincts are stronger, in others other instincts are stronger. Some people are timid. In them the instinct of fear predominates. Some men are pugnacious. In them the instinct of anger predominates. Those, in whom curiosity predominates, are said to be inquisitive. Those in whom the instinct of acquisitiveness is stronger than the other instincts are described as greedy. Some people are vain. In them the instinct of self-assertion is stronger than the other instincts. Others are meek. In them the instinct of self-abasement predominates. Those people in whom gregariousness plays a prominent part appear

sociable; those in whom the instinct of sex predominates are described as lustful or amorous.

All these qualities provide the germ for the formation

This is how
character is deter-
mine^d.

of character. There is always a
greater chance of forceful sentiments
being formed round forceful instincts.

If an instinct is extra-ordinarily strong, it will result in undesirable behaviour in case it is allowed to have its way. But if the instinct is brought under control by the formation of valuable sentiments around it, the strength of the instinct itself proves an asset to the individual. A strong instinct is, therefore, always a good thing in so far as it can be put to a very good use. If, for example, the instinct of anger is extra-ordinarily strong in a man, he will very soon become a pest to society if he gives free expression to his anger in its natural emotional form. But if his anger is sublimated and he cultivates a righteous indignation against evil, the same anger develops into a virtue. If his country is under wrongful subjugation, his anger may take the form of staunch patriotism. If there is corruption around him in society, his anger may be transformed into a strong tendency to eradicate the evil root and branch.

Thus, that which is ordinarily known as character is the resultant of the relative strength of all the instincts and their modification by experience. In one sense that person has the best character in whom the instincts like tender emotion, gregariousness and self-

Good character
needs all the
instincts.

submission predominate. But the predominance of these instincts alone will not give a man good character. Their presence is no doubt necessary. But equally necessary is the presence of the other instincts. No man can have a good character if he is not afraid of anything in the world, or if he is not angry with anything in the world, and so on. It cannot be repeated too often that *an entire absence of an instinct or a complete annihilation of one is neither possible nor desirable*. The whole point is that every instinct should perform its proper function by being sublimated into a sentiment.

Character without any instinct would be empty, but character in which an instinct is
 Which are harmonised in the self-sentiment. extraordinarily strong and always let loose in the form of an emotion is one-sided and equally undesirable. A comparatively more forceful instinct is not in itself a good or an evil. It all depends upon the way in which that instinct enters into a sentiment.* If the sentiment of self is properly formed, every strong instinct can occupy a suitable place in it. It is only in the absence of the self-sentiment that the instincts have their own way, and the character assumes the form of a state in which anarchy prevails. It is the self-sentiment which harmonises and controls the various instincts. It makes an appropriate use of all the instincts, weak as well as strong.

(3) We have had occasion to see that individuals

Individuals differ in abilities. differ in general ability, as well as in special abilities. We have mentioned those special abilities of which there is evidence. The special abilities mentioned in Chapter IV are those abilities which have been shown to be innate and not composed of other simpler abilities. Besides these, we find a number of other abilities which are either acquired by the subject in his life time, or are the result of two or more simple abilities combined, or both. Some of the more important abilities of this kind, which have been studied by recent psychologists, are as follows:—

Acuity of vision,	Acuity of hearing,
Colour discrimination,	Pitch-discrimination,
Perception of time,	Perception of space,
Imagination,	Memory,
Reasoning power,	Mathematical ability,
Power of understanding,	Musical ability,
Quick reaction.	

The last named ability 'quick reaction', deserves a brief description here, as it is the subject matter of one of the chief experimental methods of recent psychology. The reaction-time experiments have reached the height of exactness. There are instruments which can accurately measure the time, to the extent of one-thousandth part of a second, which elapses between the presentation of an object to a sense organ and the action performed by the organism as a result of it.

All sorts of reaction-time experiments are being performed in the psychological laboratories of the present day which give an insight into the working of the physical organism in its various aspects and phases. By means of reaction-time experiments psychologists not only judge the quickness or otherwise of what the subject does but they discover all sorts of things about the way in which his organism works, of which the subject himself has not the slightest knowledge. The space at our disposal does not permit us to go into the details of these experiments.

In general ability, in the natural special abilities mentioned in Chapter IV, as well as in the abilities mentioned above, and perhaps a number of other abilities, each individual differs from every other. Hence we find that *no two persons are exactly alike*. This also explains the difficulty of psycho-physically analysing an individual. There are so many factors at work that it is by no means an easy task to take each one of them into consideration and to arrive at the formula of the composition of the individual.

What we can do at this stage, therefore, is only to emphasise the fact that the *individual differences between man and man should not be lost sight of*. Ignoring the peculiarities of others is one of the greatest causes of misunderstanding and misdirection. This fact is of particular importance to a teacher. One of the worst things

that a teacher can do is to ignore the individual capabilities of his pupils. Least of all should he attempt to judge of the abilities of the children from his own abilities. It is possible that what he could do when he was of the age of his pupils, his pupils may not be able to do. What one pupil can do, another pupil may not be able to do; and so on.

(4) Perhaps the most important differences in the functioning of the psycho-physical organism are the differences in the functioning of the endocrine glands.

It has been observed, for example, that if the thyroid gland is not sufficiently active in an individual, the growth of the whole body, especially the bone, is affected. The skin becomes dry and the hair thin. The face becomes pale and puffy. The abdomen becomes swollen. There is a general impairment of sensibility. In extreme cases the person becomes feeble-minded.

When people, who are deficient in thyroid secretion, are given the extract of thyroid gland, there is general improvement both in the structure and ability of the organism. Sometimes, if the treatment is continued long enough the person becomes just like a normal individual. There are all possible grades between an almost entire lack of thyroid secretion and an abundance of it. In the latter case the pulse becomes rapid, the skin becomes flushed, there is an

increase in perspiration and the person is inclined to be excitable.

If the adrenal glands do not work efficiently, the body temperature is lowered, the pulse becomes feeble; and the person gets weak. The reverse is the case when the adrenal glands secrete more than the normal.

If the sex glands of the male do not work properly, the effect is that the person approximates more and more to the shape and form of the female. His limbs tend to become long and slender, hair does not appear on his face and he begins to think and behave like a woman. Similarly if the sex glands do not work properly in a female, she approximates more and more to the male form, her limbs become harder and hair makes its appearance on her face. She begins to think and behave like a man.

The author has collected some evidence which shows that there is a peculiarity in our make-up, in which one individual differs from another. To this peculiarity he has given the name *Circularity*. A man, who is rotund, is sociable, warm-hearted, trustful, grateful, humorous, frank, and has a tendency to enjoy the gifts of life and to be sometimes cheerful and sometimes sad. A person who lacks rotundity is just the reverse of the circular or rotund type of man. Between these two extremes there are individuals in whom circularity is found to exist in varying degrees. Shakespeare in his play *Julius Caesar* makes Caesar say:—

Let me have men about me that are fat;
 Sleek-headed men, and such as sleep o' nights.
 Yond Cassius has a lean and hungry look ;
 He thinks too much : such men are dangerous.

There is some evidence to believe that the circular type of man possesses a peculiar type of body. His face is broad. His head is broad, and round. The front view of his face is more or less square. The profile of his face is not angular. His neck is short and thick. To this type of body the name *Pyknic* is generally given. (See Fig 14) The word is derived from the Greek word *Pyknos* meaning *thick* or *dense*.

It has been supposed that the traits of character, as well as the peculiarity of body-build, mentioned above, are connected with the functions of certain endocrine glands, particularly a portion of the pituitary gland—that part which is called the post-pituitary. This is an apt illustration of the fact that the psycho-physical organism works as a whole. On the one side certain glands function in a certain way, on the other, certain features of the body take on a certain shape or configuration, and on a third side certain traits of character are formed. The whole is the working of the psycho-physical organism. We cannot separate the one from the other just as we cannot separate the colour, the shape, the sweetness, and the consistency

of an orange or apple. They are the various aspects of one and the same thing.

Similarly the body and the mind are only two aspects of one and the same thing, Psychology as the science of which we call the psycho-physical consciousness. organism. We cannot separate the mind from the body, just as we cannot separate the colour from the sweetness of the apple. It has been usual to define psychology as the science of conscious processes. Psychology is the science of consciousness in so far as it deals with perception, thought, imagination, reflection, attention, instinct, emotion, sentiment and character. But we shall be taking a very one-sided view of the whole, if we confine ourselves to a study of only these activities of the organism. Equally important are those activities of the organism of which we are not conscious at all. There is a wealth of literature on the unconscious working of the mind into the consideration of which we cannot enter in this volume. But it is included in the working of the psycho-physical organism. If we therefore bring all the activities of the psycho-physical organism under the scope of psychology, we would not be guilty of leaving out account those activities, of which we are not conscious.

(5) Perhaps the most important of all the differences between one man and another are Differences of development of the differences in the way in which they have developed. Two people may have more or less the same structure of the

organism, the same intensity of the various instincts, the same abilities, and the same mode of the functioning of the organism. But there will be a world of difference between the two, when they have grown up. This great difference is due to the different ways in which the two have grown up. Although the instincts in the two are the same, the two have not formed the same sentiments around those instincts. One has come in contact with one kind of surroundings—parents, friends, teachers and worldly circumstances; the other has come across other surroundings and circumstances. The result is that the same material has been woven into one kind of texture in the one case and into a perfectly different kind of texture in the other. In Chapter VII we have had an opportunity of examining some examples of sentiment both higher and lower. We have seen that the most important of all the sentiments are the various self-sentiments.

Neither the various self-sentiments, nor any other sentiments are exactly the same in any two individuals. One sentiment may play an extraordinarily important part in one man and another in another. Besides, the structure of the same sentiment in two different persons is not exactly the same. Righteous indignation, for example, will not be of exactly the same nature in two men, if it existed in both of them. In both it will be righteous indignation. Perhaps in both it may be directed against

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the same objects. But if we carefully analyse the working of the two organisms we shall find that the two sentiments are far from being the same. One of them may believe in the existence of God and may attribute his righteous indignation to this belief of his. The other may be an atheist and yet may be righteously indignant against an evil because he is a humanitarian.

This shows that the nature of our sentiments is determined not only by the existence of the fundamental instincts in us; it is determined to a very large extent by the ideas which we form during our life time. What is still stranger is the fact that different ideas may give rise to the same sentiment just as the same ideas may give rise to different sentiments in us. Two men may both believe in the existence of God. One may always pray to Him that his enemies may be destroyed. His belief in God helps him to form a more definite and clearer sentiment of antagonism. The other man may believe that all men are equal and worthy of love and affection because they are all the sons of one Father the God Almighty. This man's belief in God helps him to develop the sentiment of universal brotherhood and love. It all depends on what instincts are strong in us and what particular experiences we have had in life.

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APPENDIX.

THE NEED OF AN EDUCATOR.

(Published in the Bhupendra)

When a natural want is thwarted an instinctive tendency is put in readiness to act, but is not permitted to do so. It is very annoying indeed that an instinct be aroused and not allowed to result in action. Few men prove themselves equal to the strain of such deprivation and misfortune. Those who yield to it in some form or the other are the people grouped as Neurotics or Neuropathics according to the terminology of abnormal psychology and psychotherapy.

As a result of the elaborate psycho-analytic researches of the well known Dr. Oskar Pfister of Zurich it has been ascertained that a considerable percentage of all pupils in the country as well as the cities are neurotics. They simply cannot control their thwarted desires and wishes but seek, mostly unconsciously, to secure an indirect exercise of the already active instinctive tendencies.

The most wholesome and uninjurious outlet for the energies with which such instincts are charged is through innocent phantasies and dreams. The child, who is refused a bicycle or denied the use of an automobile during the day, dreams when he goes to sleep that he is riding a wheel or driving a handsome machine, and the day-dreams of sweets, dolls and fairies are common enough in boys and girls.

Among grown-ups also most of the thwarted instinctive tendencies are gratified by their being lived out in dreams and imaginations. Who has

not caught himself at times enjoying the thought of his own undeserved sufferings and his friends and acquaintances sympathising with him and talking of him in approbious terms? Who has not discovered all of a sudden, the possibilities of an educational activity. The instinct of self-assertion being repressed may give rise to a mad pursuit of comparatively less importance in which no one else is allowed to excel.

But in a majority of cases such substitute activities are a bane to the individual's character. The instinct of love or self-assertion, if thwarted, generally lead to indifference, drunkenness or pessimism. When anger is not permitted to work itself out it results in jealousy, ill wishes and abuses.

In order that the growing pupil may steer clear of these unhealthy accretions to his character, it is necessary that an expert should analyse his mind and lead him in the right direction. This is one of the many tasks of an educator. Among other things, an educator is needed to pedanalyse and substitute useful activities for the injurious compensatory activities in the pupil.

An expert in this line knows what native impulses are being starved and what complexes are seeking perverted satisfaction. He is skilled in the art of directing these tendencies into higher and higher channels of discharge "By setting the individual free from his inhibitory complexes," pedanalysis "can work transformations" in his life. The teacher sees the neurosis when he understands it, earliest, and can therefore guard most efficiently against misfortunes. One who is not competent to do this does not deserve the name "Educator."

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